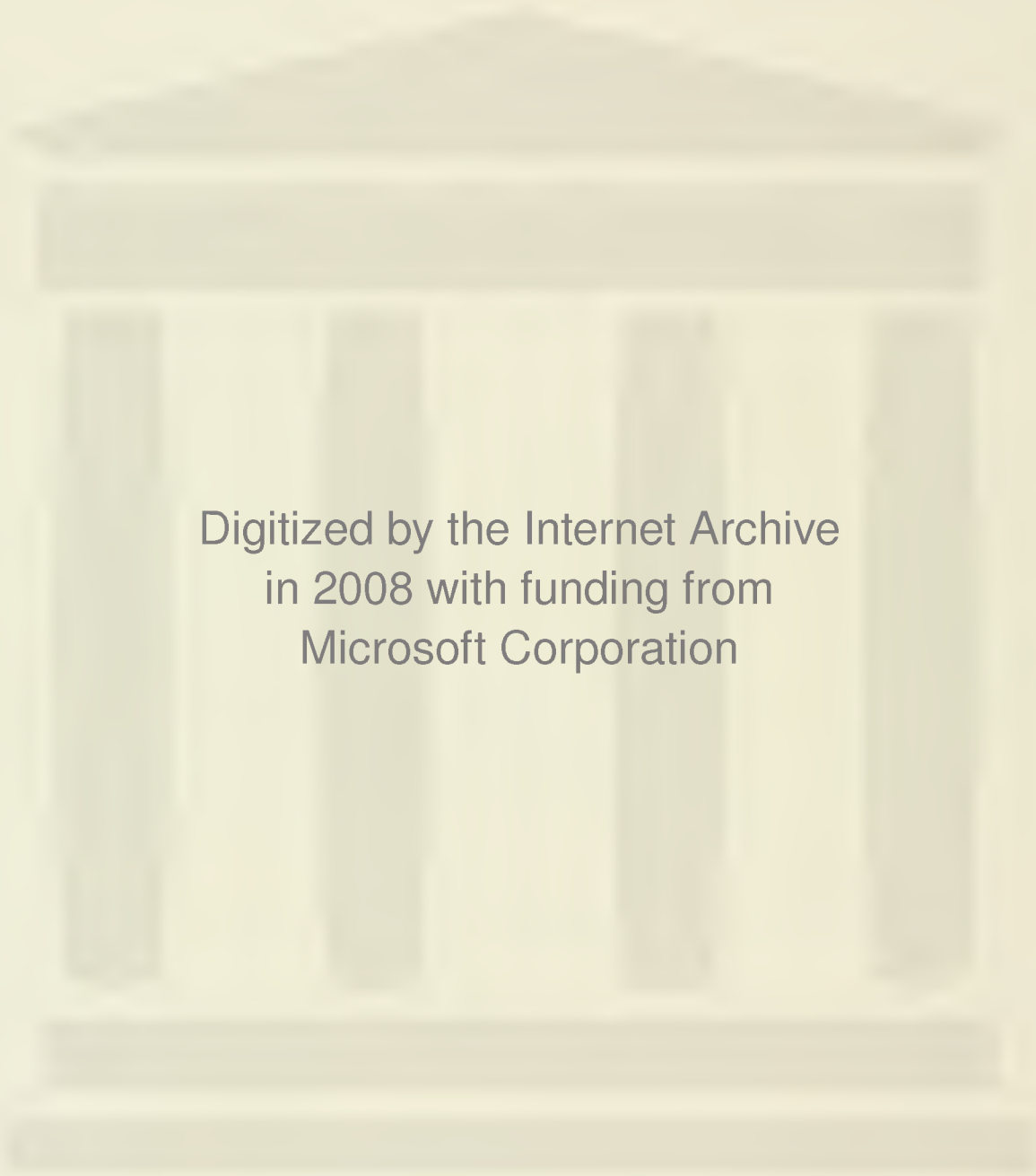

PART I. [COPYRIGHT.] VOL. I.

THE ART ALBUM

OF

New Zealand Flora

BY

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The Art Album

OF

NEW ZEALAND FLORA.

Chapter I.

Class I.—DICOTYLEDONS.

Order I.—RANUNCULACEÆ. (The Crowfoot Family.)

Character of the Order.—Herbs with alternate or radical leaves (Clematis excepted). Flowers usually hermaphrodite. Sepals, 3–6, free, often petaloid, usually deciduous. Petals, 5–10 or none, sometimes spurred or deformed, often with a pit or scale towards the base, deciduous. Stamens hypogynous, usually very numerous; anthers adnate. Carpels numerous, free on a torus which sometimes elongates. Fruit of few, or many 1-seeded achenes, or many-seeded follicles; Seeds with fleshy albumen, and a minute embryo.—*Handbook of New Zealand Flora, p. 1.*

Description of the Order.—

ABOUNDING in all temperate climates, rarer in tropical. Many European and other genera have irregular flowers, and otherwise differ from the New Zealand types; such as the cultivated Aconite, Larkspur, Columbine, &c. The juice of the *Ranunculaceæ* is watery, and very acrid. All the species are more or less poisonous. The leaves are usually parted, and the petioles, or footstalks, generally dilated at the base, so as to enfold the stem; this is, indeed, so frequently the case, that when a plant is found to have this peculiarity, combined with numerous stamens growing round, and from beneath a little heap of carpels in the centre of the flower, the student in botany may be certain that the plant belongs to the *Ranunculaceæ*. There are, however, many plants belonging to the family which have neither cut leaves

nor dilated petioles. The order takes its name from the genus Ranunculus. All the New Zealand genera, which consist of the following, are also British:—(1). Clematis, climbing shrubs; (2). Myosorus, herb; (3). Ranunculus, herbs; (4). Caltha, herb.

GENUS I.

CLEMATIS *(Linn.)* The Clematis or Virgin's Bower.

Generic Character.—Much branched, slender, climbing shrubs, with opposite compound leaves, and panicles of white or cream-coloured polygamous flowers; Sepals, 3–8, petaloid, valvate; Stamens, 5–20; Carpels many, 1-ovuled. Achenes indehiscent—the styles elongated into long feathered awns.—*Handbook of New Zealand Flora, p. 1.*

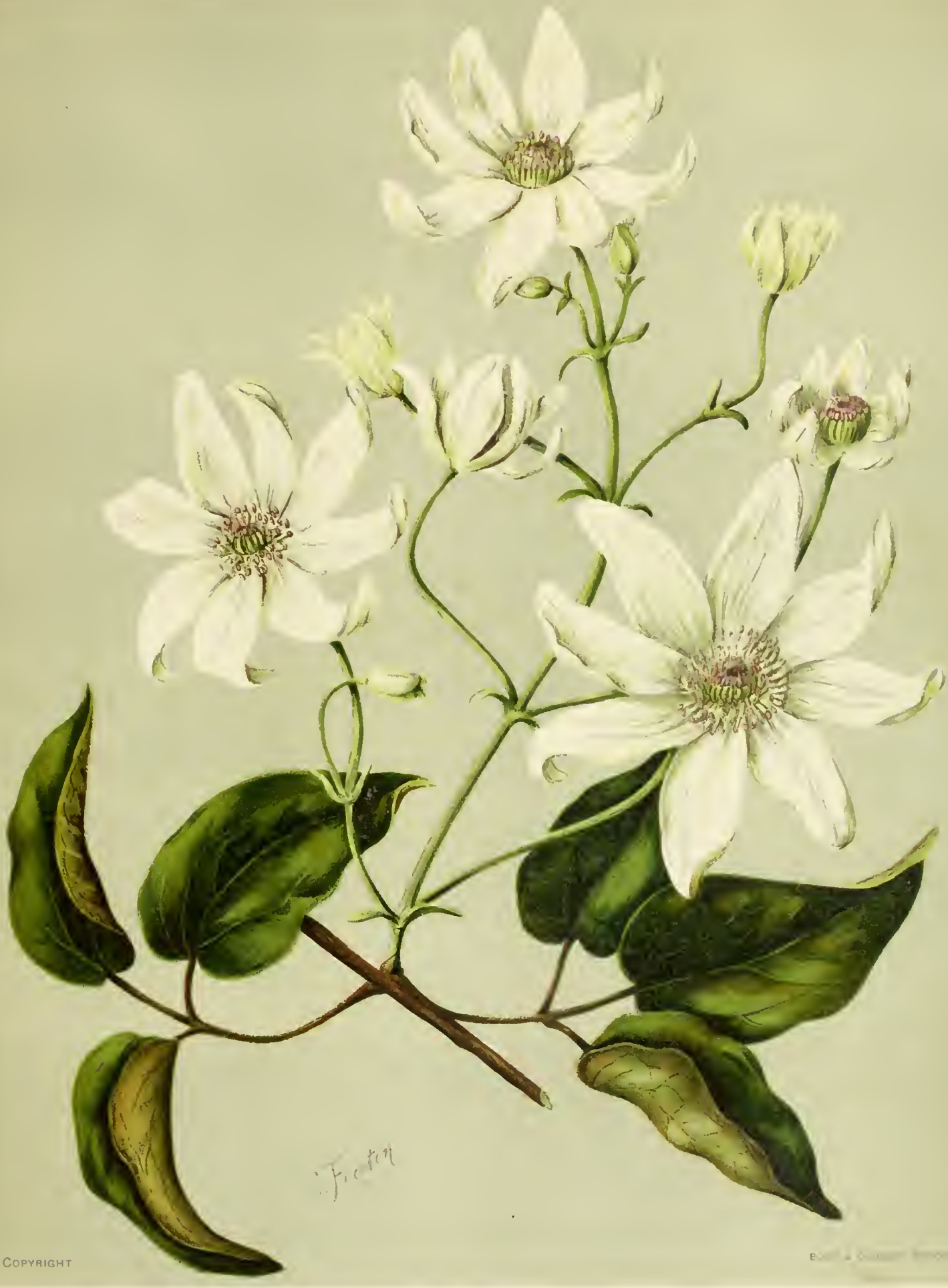
Description, etc.—A large and widely-diffused genus, of which many foreign species have blue or purple flowers, herbaceous, or erect stems, entire leaves, or minute petals. The New Zealand species are very variable, passing one into the other; their flowers are almost unisexual, the males having no carpels, and the females few stamens. The anthers have no appendage at the tip, as most of the Australian species have; *C. parviflora* alone having a very minute one.

The name "Clematis" which signifies "a little vine," alludes to the habit of growth of these species.

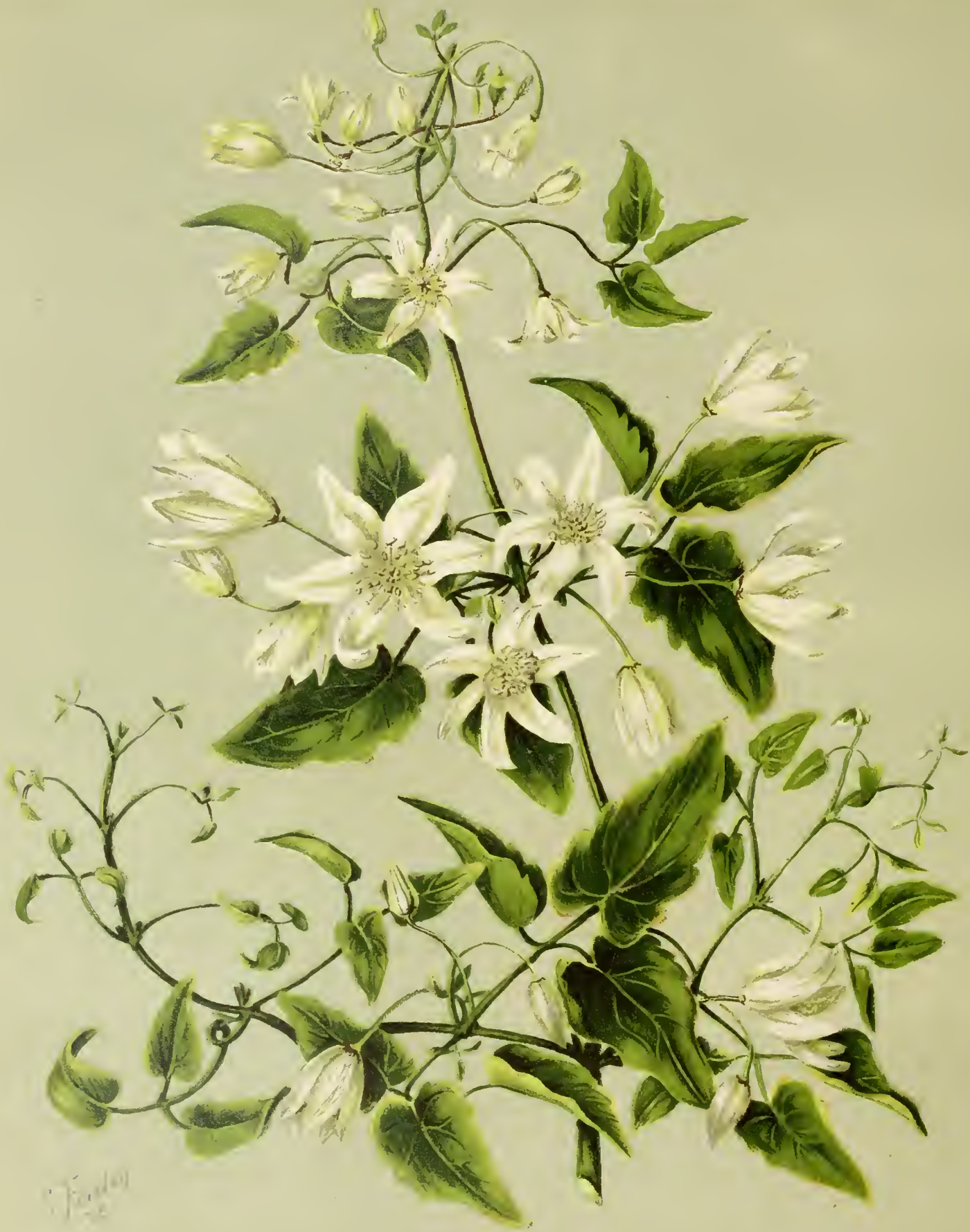
1. CLEMATIS INDIVISA *(Willd.)* The Entire-leaved Clematis.

Specific Character.—A large, strong, woody-climber, with trunk often ½ ft. in diameter. Leaves, 3-foliolate, coriaceous, glabrous or downy; Leaflets, 1–4 in. long, varying from linear-oblong to ovate-cordate, all petioled, entire, rarely lobed. Flowers, 1–1 in. diameter; most abundantly produced; white, sweet-scented. Sepals, 6–8, broad or narrow-oblong. Anthers obtuse, oblong. Achenes very downy.—*Handbook of New Zealand Flora, p. 2.*

Description, etc., Plate No. 1.—The "PUAWANANGA."—This handsome plant is abundant in most districts throughout the Islands. It is found more especially on the skirts of inland forests, where it climbs the loftiest of trees, and garlands them with its chaste flowers and handsome foliage. It is the largest and choicest member of the family, and gladdens the Spring (month of October) with its presence. On account of its climbing habit, it is at times impossible to obtain its floral treasures, which, pendant from the highest branches of the stately forest trees, defy all attempts, at the hands of the coveteous ones below, to possess them. The flowers are remarkable for their size, whiteness, and elegance of form. Many of the European species are exquisitely pure and produce a long succession, and a great profusion of large, variously-coloured beautiful,



PUAWANANGA.—Clematis indivisa.



PIKIARERO.—Clematis hexasepala.

handsome flowers, which, trained to a trellis, or the wall of a conservatory, give an appearance at once effective and attractive. The Clematis can be propagated by grafting, cuttings, layering, or seed. The flowers of the European Clematis are hermaphrodite; that is, both the seed organs are contained in the same flower. In New Zealand, the flowers are almost unisexual, or of one sex only, the males having no carpels, and the females few stamens. The "Puawananga" has been successfully introduced into many colonists' gardens, where it has become a handsome and interesting addition, well repaying, by its presence, the trouble necessary in raising.

2. CLEMATIS HEXASEPALA *(D.C.)* The Six Sepal Clematis.

SPECIFIC CHARACTER.—Smaller in all parts than *C. indivisa*, and best distinguished by its smaller, narrow, ovate-cordate, often lobulate leaflets, small flowers, and very narrow anthers. Leaves glabrous, coriaceous; leaflets 1–1½ in. long, coriaceous, ovate-lanceolate, serrate, or lobulate, rarely entire. Peduncles pubescent. Flowers white, 1–2 in. diameter. Sepals 6, broadly linear, obtuse, downy. Anthers long, linear, obtuse. Achenes pilose.—*Handbook of New Zealand Flora, p. 2.*

DESCRIPTION, etc., Plate No. 2.—The "PIKIARERO."—This beautiful climber is common to both the Northern and Middle Islands, but more particularly delights in the sandy soils of the East Coast of the Northern Island, which might not be inaptly designated its home, as there, in the woods and along the banks of rivers, it is seen to perfection. It blossoms in the Spring, when its mass of beautiful flowers imparts a graceful and picturesque appearance to the landscape. In some parts it is known as the "Traveller's Joy," a name probably due to its appearance in early spring, as a harbinger of brighter weather and sunnier skies. On account of its attractive beauty, the "Pikiarero" has ever been an object of interest to the Maoris, who used it upon festive occasions as a means of personal adornment; particularly the native maidens, who bedecked their heads and ornamented themselves with its magnificent sprays, the pale, creamy flowers forming a charming contrast to the bronzed skin of the wearers.

"Garlands of the graceful Pikiarero,
Gathered in the early morning;
Wreathed around their supple limbs;
Symbol of their pure intentions,
And the clinging of the human heart."

As an addition to our gardens, the graceful "Pikiarero" is well worthy of attention; and few enclosures are without a secluded corner, or a lattice, where it would be a worthy addition, as it is hardy, quick-growing and beautiful. If the young plants are transplanted in the autumn, there is no difficulty in obtaining a successful growth.

3. CLEMATIS FŒTIDA (*Raoul.*) The Fœtid Clematis.

SPECIFIC CHARACTER.—A slender climber. Leaves, 3-foliolate; leaflets ⅓–1 in. long, ovate-cordate, usually broad, sub-acute, entire or lobed, coriaceous, glabrous below. Panicle densely tomentose, as are the sepals. Flowers small—⅓–⅔ in. diameter; fœtid. Sepals 4–6, linear, filaments slender; anthers shortly linear-oblong. Achenes silky.—*Handbook of New Zealand Flora, p. 2.*

DESCRIPTION, etc.—This elegant slender climber is common to both the Northern and Middle Islands, growing abundantly on the outskirts of woods, where it clothes, with its luxurious foliage, the smaller trees and shrubs. When it is in flower, it presents a very chaste and beautiful appearance. Similarly to its larger confrère, the *C. hexasepala*, it is used by the native girls to adorn themselves with upon festive occasions. It blossoms in September and October, when it delights the eye of the traveller with its rich, canary-yellow flowers, and dark-green foliage, mantling the thicket and copse, as a tribute of returning spring. This humble climber, it is due to state, has been greatly mis-named; since it possesses a strong perfume, which is not at all unpleasant, and is considered to be its chief attraction.

OTHER SPECIES OF CLEMATIS.

4. C. PARVIFLORA (*A. Cunn.*)

A slender climber, more or less covered with fulvous pubescence. The flowers of this species are cream-coloured, and from ⅓ to 1 in. diam. It is abundant on the skirts of woods in the Northern Island, and a variety of it is found at Nelson.

5. C. COLENSOI (*Hook., F.*)

A slender climber. Flowers are small, green, and very sweet-scented. It is found in various parts of the Northern and Middle Islands. It is allied to *C. hexasepala*, from which it is easily distinguished by its smaller size and green flowers. Named after Mr. Colenso, F.L.S., one of our most able and indefatigable New Zealand botanists.

GENIUS II.

MYOSURUS (*Linn.*) The Mousetail.

GENERIC CHARACTER.—Small stemless annual herbs, with linear leaves, and many 1-flowered scapes; Sepals, 5, gibbous or tubular, or spurred at the base. Petals, none in the New Zealand species. Stamens, 5 or more. Carpels, 1-ovuled. Achenes small, beaked, sessile, and crowded on the torus, which elongates as they ripen.—*Handbook of New Zealand Flora, p. 3.*

DESCRIPTION, etc.—A small genus, native of the temperate Northern and Southern

Hemispheres. It is a very minute plant, and is well marked by having its seeds arranged on a long columnar receptacle, so as to produce a curious resemblance to a mouse's tail, hence its name.

1. MYOSURUS ARISTATUS (*Benth.*) The Bearded Mousetail.

SPECIFIC CHARACTER.—A herb about 1 in. high; Leaves 1-20th inch, broad; Flowers, minute, greenish, apetalous. | Sepals with a spurred base; Stamens, 5 or 6 Fruiting torus, ¼–½ in. long, erect *Handbook of New Zealand Flora, p. 3.*

DESCRIPTION, etc.—This minute plant is a native of the Northern Island; it is also indigenous to California and the Andes of Chili, where it grows at an elevation of 11,500 feet. It is not found in Australia, where the European species takes its place. It is possibly the smallest flowering plant in New Zealand. *M. minimus*, the best-known European species, rarely attains more than three or four inches in height, and bears a few linear spathulate leaves, and leafless stalks, terminating in a small greenish flower. It grows most frequently among corn in a chalky or gravelly soil, but is often overlooked in consequence of its small size.

GENUS III.

RANUNCULUS (*Linn.*) The Crowfoot.

GENERIC CHARACTER.—Herbs with petioled radical leaves, and yellow, or white, flowers; Sepals, 3–5, concave; Petals, 5–20, with 1–3 glands, or scales near the base. Achenes numerous, small, with short, straight, or hooked styles, and one ascending ovule.—*Handbook of New Zealand Flora, p. 3.*

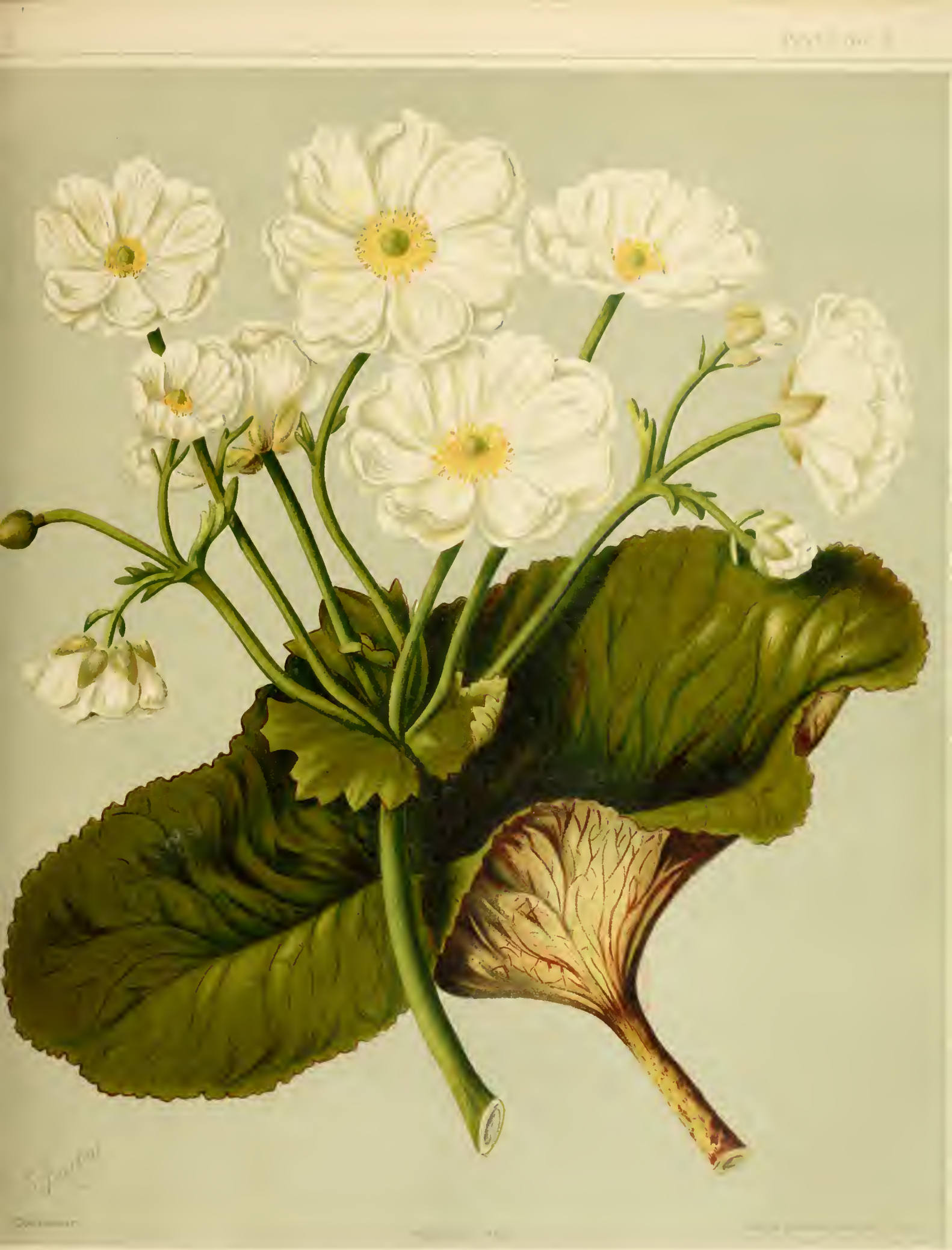
DESCRIPTION, etc.—A very large genus in all temperate countries, rare in tropical ones; many of its members are aerid and poisonous. Some of the New Zealand are the finest known; all are very variable, indeed. The plants belonging to this genus are generally found in moist places, and hence they are called "Ranunculus," from *rana*, a frog. They take their English name of "Crowfoot" from the shape of the leaves, which are, for the most part, deeply cut, so as to resemble the foot of a bird. The plants of this order in New Zealand not only inhabit the lowlands, but nestle in the snow rills of the Northern and Southern mountain ranges, from 5,000 to 6,000 feet above the sea level. There are about twenty species, very variable in character and form, and about the same number are reckoned to belong to the British Isles.

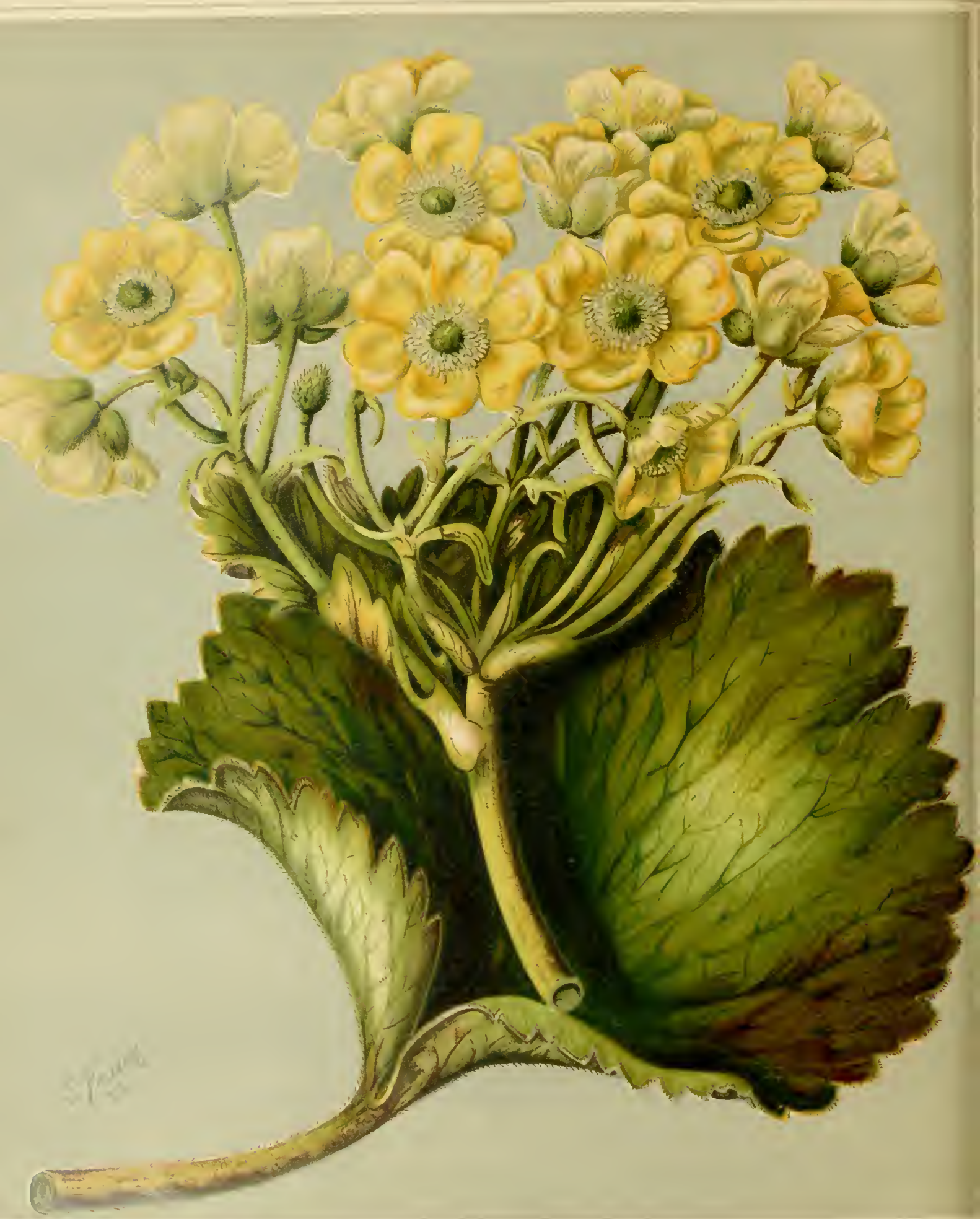
1. RANUNCULUS LYALLI (*Hook., F.*) Mr. Lyall's Ranunculus.

SPECIFIC CHARACTER.—Leaves peltate, on long, stout petioles, glabrous; limb orbicular, very concave, thick and coriaceous, 15 in. diam.; simply crenate; veins reticulated; cauline, sessile, lobed and crenate; seedling leaves not peltate, broadly rhomboid, with cuneate bases. Peduncles very numerous, villous, stout, erect, with linear-oblong bracts. Flowers waxy-white, 4 in. diam.; Sepals, 5, broad, pilose. Petals, broadly cuneate, with an obscure oblong basilar gland. Stamens, small, short; anthers oblong. Torus, cylindric, hairy, lengthening after flowering. Achenes, villous, oblique; style flexuose, subulate; edges compressed, not margined.—*Handbook of New Zealand Flora, p. 4.*

DESCRIPTION, etc., Plate No. 3.—The "SHEPHERDS' OR MOUNTAIN LILY."—An erect, very handsome, coriaceous (leathery) plant, 2 to 4 ft. high, with a paniculately branched many-flowered stem. The flowers are white, and from 3 to 4 inches in diameter. It is indigenous to the Middle Island, in the vicinity of Milford Sound, and in moist places on the Southern Alps, at an elevation of from 2,000 to 3,000 feet, and in Otago at from 1,000 to 4,000 feet on the ranges. It is the noblest species of the Genus, and possibly the largest and handsomest Ranunculus in the world. It has been named by the shepherds of Otago the "Water Lily," on account of its fancied resemblance to that plant. This queenly plant as seen in its native home, lining the shady banks of mountain streams, and skirting the rushing cascades that dash impetuously down the steep ravines, is very striking. We learn from those who have sought out this Alpine gem in its fastnesses, that it is often found displaying as many as fifty blossoms at the same time—a truly magnificent sight. The most graphic description would fail to give any adequate idea (says Mr. F. N. Adams, of Christchurch, a very energetic botanical explorer of the snow regions of Canterbury) of the purity and charm of these Alpine flowers growing in vast numbers on the broken ground, amidst rocks and boulders deposited by the floods and glaciers, side by side with the yellow Mountain Lily (*R. Godleyanus*), and interspersed with the Alpine Marygolds *(Senecios)*, and the little star-like *Montias*. This truly beautiful Ranunculus is named in honour of Mr. Lyall, F.L.S., an ardent botanist of distinction, whose name and work is closely allied with the Flora of New Zealand, The plant is in cultivation amongst the settlers of the Middle Island, but like all Alpines, demands peculiar attention; requiring in summer the greatest sun-warmth possible, and in winter the fullest exposure to cold. This, and the *R. Traversii*, are the only known Ranunculi with peltate leaves. Owing to the large size of this plant, it was necessary to reduce its outlines from the original, a lovely specimen especially gathered for this work, from the Alpine region, midway between Christchurch and Hokitika. The plate conveys to our readers a correct representation of the plant; now no longer

" . . . . Born to blush unseen,
And waste its sweetness on the desert air."





Bock & Cousins, Chromo-Litho.

THE KORIKORI.—Ranunculus insignis.

2. RANUNCULUS TRAVERSII (*Hook., F.*) Mr. Travers' Ranunculus.

SPECIFIC CHARACTER. Very similar to *R. Lyalli*, but smaller; leaves, 6-7 in. diam., and broadly twice or thrice crenate, with deeper notches, and with two incisions near the base. *Handbook of New Zealand Flora, p. 4*

DESCRIPTION, etc.—This handsome species is second only in size and beauty to *R. Lyalli*, and is likewise a native of the Middle Island, where in the moist gullies and ravines of the mountains it luxuriates. The flowers are cream-coloured and handsome. It is named after Mr. W. T. L. Travers, F.L.S., an indefatigable botanist.

3. RANUNCULUS INSIGNIS (*Hook., F.*) The Remarkable Ranunculus.

SPECIFIC CHARACTER. — Erect, robust, paniculately branched, villous, often 4 ft. high; fulvous or rufous when dry. Leaves rounded-cordate, 4-8 in. broad, very coriaceous, crenate, and lobed; petioles, 6 in. long. Peduncles very numerous, stout, with (often opposite) linear-oblong bracts. Flowers golden, 1½ in. diam. Sepals, 5-6, oblong, woolly at the back. Petals 5-6, obcordate, with 3 glands near the base. Achenes forming a small head upon an oblong pubescent torus, villous, tumid, with a slender, nearly straight style.—*Handbook of New Zealand Flora, p. 4.*

DESCRIPTION, etc., Plate No. 4.—The "KORIKORI."—This fine plant is native to the Northern Island, and a portion of the Nelson District. It is the largest and handsomest Ranunculus in the northern parts, often attaining a height of four feet. It is found growing in luxuriance on the lofty summits of the Ruahine, Tongariro, and Hikurangi Mountains, and the high mountain ranges of Nelson, between Mount Arthur and Mount Peel, where it is abundant. At the time it was named *Insignis*, or "The remarkable one," it was supposed to be the finest and best Ranunculus extant, but since then others, such as *R. Lyalli*, *R. Traversii*, and *R. Godleyanus* have been discovered, and share with it the honours for size and beauty. The Maoris who ascend the mountains during early summer, when it is in bloom, never fail to secure a specimen of this plant to adorn their hats, in order to shew their prowess, and as a remembrance of their adventurous journey. It is known to the settlers as the Big Buttercup, and is probably the largest buttercup in the world. The subject of our plate was obtained in the Nelson district, and shews vividly the character of this grand Ranunculus. As soon as the snow disappears the "Korikori" rears up its head, and gladdens the mountain sides with its golden cup-like flowers. Many of the European *Ranunculaceæ* are favourite garden flowers, and vary much in colour and form. The Buttercup, Monkshood, Larkspur, Columbine, Bachelor's Buttons, and Hellebore are all members of this family. The common Buttercup (*R. acris*), were it not a common weed, would be thought a beautiful flower from the golden hue of its glossy petals, and its very handsome leaves. Shakespeare, in his writings, makes many allusions to the Buttercup, under the name of

Cuckoo Cup, Cuckoo Bud; and many of the old writers speak of it as Golden Cup and King Cup. Gerarde, the Elizabethan herbalist, informs us with great delight, "that in a field at Southwark, at the back of the theatre by London—the Globe, Shakespeare's Theatre—he found amongst the glazed and golden cups of Crowfoot growing there, one with a double flower." The Buttercup is so called from the vulgar notion that, when eaten by cows, it gives a deeper yellow to the butter; the fact is that the cow will not touch it, and that its long stalks may be seen standing in great abundance in pastures, all the grass of which has been eaten off quite close by cattle. Buttercups possess a poisonous property, which disappears when the flowers are dried in hay. So caustic are the petals that they will sometimes inflame the skin of tender fingers. Every child should be cautioned against eating them; indeed it is desirable to caution children about tasting the petals of any flowers or putting into their mouths any leaves except those known to be harmless. The subject of our Plate No. 4, *R. insignis*, is well worthy of cultivation. It may be grown from seed, or by transplanting. Specimens have been sent to the Royal Gardens, Kew, England, where it may be seen growing, and it has been successfully produced in colonial gardens. It likes a stiff soil, and blooms in the spring of the year. It is asserted by some that it blossoms again in the autumn.

OTHER SPECIES OF RANUNCULUS.

4. R. PINGUIS (*Hook., F.*)

Leaves entire, 1–3 in. Petals, 5–8. Achenes, glabrous. Flowers, $\frac{3}{4}$–1 in. diam.; golden. Found on the high lands of the Middle Island. It is called *Pinguis* on account of its stout and fleshy habit.

5. R. NIVICOLA (*Hook.*)

Leaves deeply notched, 3–7 lobed. Petals, 10–15. Flowers, many, bright yellow, $1\frac{1}{2}$ in. diam. Northern Island, near the perpetual snow on Mount Egmont. Named *Nivicola*, owing to its growing in close proximity to the perpetual snow.

6. R. GERANIIFOLIUS (*Hook.*)

Leaves 3–5 lobed. Petals, 10–12. Flowers few, $\frac{1}{2}$–$1\frac{1}{2}$ in. diam., golden. Closely allied to *R. nivicola*, but smaller in all its parts. Northern Island, snow rills on the Ruahine range; Middle Island, Southern Alps, alt. 2,500 feet. It derives its specific name from the geranium-like appearance of its leaves.

7. R. BUCHANANI (*Hook., F.*)

Glabrous; leaves lobed, or partite. Scape, 1-flowered, white. Middle Island, Otago Lake District in large patches; alt. 5,000 to 6,000 feet. Named in honour of Mr. J. Buchanan, F.L.S., botanical draftsman and botanist, lately in the service of the New Zealand Geological Department.

8. R. HAASTII (*Hook., F.*)

Glabrous, fleshy; leaves multifid, cauline involucrate. Flowers many, yellow. Middle Island, shingle beds on Mount Torlesse, and the Ribbonwood range; alt. 4,000 to 6,000 feet. Named after Sir Julius Von Haast, F.R.S., Curator of the Canterbury Museum.

R. GODLEYANUS (*Hook., F.*)

Erect, very stout; 1 ft. high. Leaves all radical, with broad, thick petioles, 2–5 in. long, and 1 in. broad; blade, 6–7 in. long. Scapes, stout. Flowers numerous, cormybose, 1–1½ in. across; deep yellow. Middle Island; Whitcombe Pass, on the edge of a lagoon; alt. 4,200 feet. Named in honour of Mr. Godley, the pioneer settler of Canterbury.—*Additional Notes, Handbook of New Zealand Flora, p. 723.*

There are many other species, all of which are stated to be smaller, and less remarkable, than those mentioned. A drawing of the *R. plebeius* is given in our Plate No. 5, fig. 1. This species is abundant throughout the Islands. It is likewise a common Australian plant, and probably also indigenous to South Africa and Europe.

GENUS IV.

CALTHA (*Linn.*) The Caltha, or Marsh Marigold.

GENERIC CHARACTER.—Glabrous tufted herbs, with most, or all of the leaves, radical, and 1-flowered scapes. Sepals, 5 or more, petaloid, imbricate. Petals, none. Stamens, numerous. Carpels several, with many ovules in two rows on the ventral suture. Follicles splitting along the inner face, several-seeded.—*Handbook of New Zealand Flora, p. 9.*

DESCRIPTION, etc.—A small genus, found in the temperate and cold regions of both hemispheres, distinguished from *Ranunculus* by the absence of a green calyx, and from *Helleborus* by the absence of tubular petals. The flower of the *Caltha* is yellow, its name denoting a flower yellow in colour and strong of smell.

1. CALTHA NOVÆ ZELANDIÆ (*Hook., F.*) The New Zealand Caltha.

SPECIFIC CHARACTER.—Short, stout, tufted, glabrous perennial, with a thick rootstock, numerous radical leaves, and short, thick, 1-flowered scape. Leaves spreading; blade ovate-oblong, notched at the apex, deeply cordate, and auricled at the base, with the obtuse auricles turned up and appressed to the surface of the leaf. Petioles, 1–6 in., dilated at the base into large membranous sheaths. Flowers, 1–2 in. diam. Sepals, 5–7, linear subulate. Stamens short, very numerous. Carpels 5–7, broadly ovate, gibbous; style short, hooked.—*Handbook of New Zealand Flora, p. 9.*

DESCRIPTION, etc.—Fig. 2, Plate No. 5.—The "NATIVE CALTHA."—Northern Island, top of the Ruahine mountains. Middle Island, alpine districts, at an altitude of from 4,000 to 6,000 feet. The *C. introloba* of Tasmania and Victoria is very closely allied to this species. The true Marsh Marigold, *C. palustris*, is a stout herbaceous plant, with hollow stems, large, glossy, roundish-notched leaves, heart-shaped at the base, and conspicuous bright yellow flowers. It is a native of Europe, Western Asia, and North America, growing in marshy meadows and about the margins of ponds, rivers, and brooks. The flowers, if gathered before they expand, are said to be a good substitute for capers. The juice of the petals, boiled with alum, stains paper yellow. The *Caltha* of the Latin poets is considered to be the common Garden Marigold.

Chapter II.

Order II.—MAGNOLIACEÆ (*Tribe Winterea.*) The Magnolia Family.

Character of the Order.—Aromatic shrubs or trees, with alternate, exstipulate leaves. Sepals and petals imbricated in 2, 3, or in many series; very deciduous. Stamens numerous; hypogynous. Filaments often thick or dilated: anthers, adnate. Carpels few, in 1 series, with 2 or more ovules attached to the ventral suture. Stigma sessile and terminal, or decurrent along the suture. Ripe carpels of free, small drupes, follicles or berries. Seeds few; testa shining; albumen copious, fleshy; embryo small.—*Handbook of New Zealand Flora, p. 9.*

Description of the Order.—

CONTAINING many genera, this order abounds in the Southern United States, the mountainous regions of India, and Eastern Asia; its qualities are aromatic. The Magnolia, from which the order receives its name, is a well-known plant, and was so called to commemorate the fame of that celebrated botanist, Pierre Magnol, Professor of Medicine and Botany at Montpellier, in the latter part of the seventeenth, and beginning of the eighteenth, century. The genus Magnolia consists for the most part of large trees, with fine foliage, and handsome fragrant flowers. Most of the species have aromatic tonic properties, which has led to their employment in fevers, rheumatism, and other complaints. The beauty of the foliage and flowers of these trees give them yet greater claims to our regard than their medicinal properties, which, although not slight, are excelled by those of other plants. The noblest of all is, perhaps, *M. grandiflora*, a native of North Carolina, where it forms a tree sixty to one hundred feet high, though one mentioned as indigenous to Northern India, growing to the height of one hundred and fifty feet. Some of the species in cultivation are low-growing shrubs, differing in the shape of their leaves and period of flowering, but all possess an exquisite fragrance.

There are a few species and varieties that need the protection of a greenhouse, even in temperate climates. In New Zealand, the order is represented by only one genus, DRIMYS, generally considered by botanists to consist of two species, *D. axillaris* and *D. colorata*, but neither of them possess fragrance.

GENUS I.

DRIMYS (*Forst.*) The Drimys.

GENERIC CHARACTER.—Sepals, 2 or 3, membranous, combined into an irregularly lobed calyx. Petals, 6 or more in 2 or more series. Filaments thickened upwards; anther cells diverging, carpels few.—*Handbook of New Zealand Flora, p. 10.*

DESCRIPTION, etc.—A genus consisting of trees, natives of South America, Australia, Borneo, New Caledonia, and New Zealand. *D. Winteri*, a native of Chili and the Straits of Magellan, furnishes the bark known as Winter's Bark, which, both in appearance and properties, is much like *Canella* bark, but of a darker colour internally. It is a stimulant aromatic tonic, but is seldom used. This bark was first introduced into England by Captain Winter in 1579, he having accompanied Sir Francis Drake to Magellan Straits. In Brazil the bark of the *D. granatensis* is used against colic. *D. piperita* is a native of Borneo.

1. DRIMYS AXILLARIS (*Forst.*) The Axil-flowered Drimys.

SPECIFIC CHARACTER.—A small, slender, evergreen tree, 10–30 ft. high, with black bark, aromatic and pungent in all its parts. Leaves 1–6 in. long, elliptical-ovate, blunt, shortly petioled, quite entire, bright green above, glaucous below, pellucid dotted, midrib hairy beneath. Flowers small, axillary, or from scars of fallen leaves, solitary, or few together; pedicels slender. Petals unequal, linear. Stamens 8–10, in several series. Berries about 3, size of a peppercorn. Seeds, several angled.—*Handbook of New Zealand Flora, p. 10.*

DESCRIPTION, etc.—Fig. 3, Plate No. 5.—The "HOROPITO."—This beautiful little evergreen tree is fairly abundant in forests throughout the Islands. It will be seen that though it is classed as one of the Magnolia family, it has but little general resemblance to the handsome plants of that name, which grace our gardens, and regale us with their fragrance. Apart from this, however, it has some pretensions of its own; with its bright shining foliage, and coal-black branches dotted here and there with clusters of orange-coloured berries, almost always growing together in groups of threes. It is very generally known by the colonists as the "Pepper Tree," on account of its highly pungent properties. The flowers are insignificant, and of a pale green colour, closely set in upon

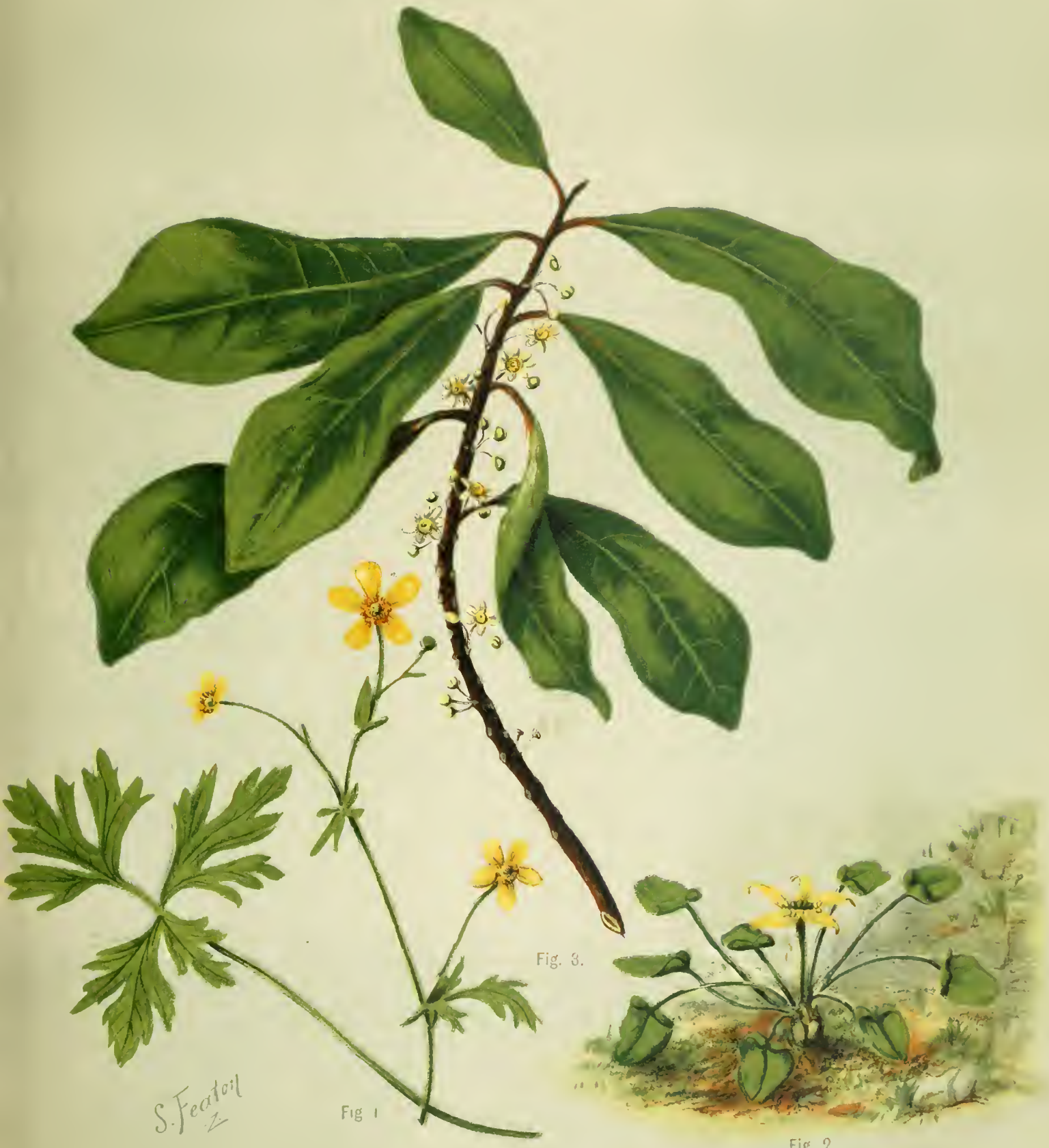


Fig. 3.

S. Featon

Fig 1

Fig. 2

1. Ranunculus plebeius; 2. Caltha Novæ Zelandiæ; 3. Drimys axillaris.

the branches. The medicinal properties which pervade the whole plant are sedative and tonic. A decoction of the leaves is not uncommonly used by bushmen and others to allay inward pain, and is honoured with the name of "Maori Painkiller." In the South the tree is botanically known as *D. colorata*, and is said to have pale blotched leaves, being generally considered a different species; this latter is also found in mountain districts of the Northern Island. The trunk is rarely more than six or eight inches in diameter. The wood, which is pale in colour, is useful for inlaying and small cabinet work, and for such is generally in request.

Chapter III.

Order III.—CRUCIFERÆ. The Cruciform Family.

Character of the Order.—Herbs, usually with small racemose flowers. Sepals 4, free. Petals 4, free, placed cross-wise. Stamens 6, (rarely 1, 2 or 4), hypogynous, 2 longer than the others. Ovary 2-celled, with 2 or more ovules. Capsule 2- (rarely 1) celled, bursting longitudinally by 2 valves, which fall away from the seed-bearing placentas. Seed, exalbuminous with the radicle turned up towards the edges (accumbent) or back of the cotyledons (incumbent).—*Handbook of New Zealand Flora, p. 10.*

Description of the Order.—

A LARGE order abounding in all temperate climates, especially in Europe and Asia—most of the New Zealand genera are also British—the properties of the plants are stimulant, and antiscorbutic. None of the plants are poisonous, and many of them are culinary vegetables, such as Cabbage, Cauliflower, Turnip, Radish, Cress, Horse-radish, etc. They contain much sulphur and nitrogen, and, on account of this, when decaying, give off a disagreable odour. Many garden flowers, such as Wall-flower, Stock, Rocket, and Honesty, are found in this order, which takes its name from the four petals arranged like a cross, which regularity of form, marks it as very distinguishable. The New Zealand genera consists of the following:—1, Nasturtium, flowers yellow; 2, Barbarea, flowers yellow; 3, Sisymbrium, white or yellow flowers; 4, Cardamine, white flowers; 5, Braya, white flowers; 6, Lepidium, white flowers; 7, Notothlaspi, white flowers.

GENUS I.

NASTURTIUM (*Brown.*) The Water Cress.

GENERIC CHARACTER.—Branching herbs with usually yellow flowers, and cut leaves. Sepals, spreading. Petals, with short claws, yellow, sometimes none. Stamens, 6 or fewer. Pod, sub-cylindric, usually curved, valves membranous, concave, many-seeded. Seeds in 2 series in each valve, minute, turgid. Cotyledons accumbent.—*Handbook of New Zealand Flora, p.* 10.

DESCRIPTION, etc.—A large British genus of which the Water Cress (*N. officinale*) is a white-flowered species, abundantly naturalized in New Zealand rivers, etc. The genus is said to have derived its name from the effect its acridity produces on the muscles of the nose—*nasus tortus*, signifying a convulsed nose.

1. NASTURTIUM PALUSTRE *(D.C.)* The Marsh Cress.

SPECIFIC CHARACTER.—A sub-erect glabrous, or pilose, branching herb, with entire or pinnatifid leaves, auricled at the base, the lobes sinuate-toothed. Flowers on slender pedicels, small. Petals hardly longer than the calyx. Pods turgid, oblong, as long as or shorter than their pedicels, curved.—*Handbook of New Zealand Flora, p.* 11.

DESCRIPTION, etc.—This herb is not uncommon in moist places, in both the Northern and Middle Islands. Sir J. D. Hooker says in his notes that he adopted the name *palustre* for this plant because it is that used in most Continental books, and in "Bentham's Australian Flora," but that of *terrestre* has equal claims to be retained. It is a very widely-distributed plant in both the Old and New World. A state with almost entire leaves, *N. semipinnatifidum*, (Hook.,) sometimes occurs. The common Watercress (*N. officinale*), which is indigenous to Britain is a well-known, hardy perennial, and has been abundantly naturalised in New Zealand. In the rivers of Canterbury and in many other favourable localities it has become a perfect pest, attaining a size rarely seen in Europe. As a spring salad the young shoots and leaves of Watercress have been used from time immemorial. They are stated to have been eaten by the ancients along with lettuces, to counteract the coldness of the latter by their warm and stimulating properties, and at the present day they are found upon almost every table, the popular belief being, that when eaten fasting, they possess the property of exciting the appetite, and acting as a powerful anti-scorbutic. The first attempt in Europe to cultivate Watercresses by artificial means was made by one Nicholas Meissner at Erfurt, the capital of Upper Thuringia, about the middle of the sixteenth century. The soil and other circumstances being favourable for their growth, the experiment proved successful, and the Watercresses of Erfurt soon acquired, for their superior quality, that celebrity which they still maintain; most of the cities on the Rhine, as well as the markets of Berlin, 120 miles distant, being constantly supplied with them. In the neighbourhood of London the culti-

vation of Watercresses was first introduced by a Mr. Bradbury at Springhead near Gravesend, and has continued to spread, particularly in localities favourably situated with regard to springs of water. Near Rickmansworth in Hertfordshire, Waltham Abbey in Essex, Uxbridge in Middlesex, and various other places, there are plantations many acres in extent, which are scarcely sufficient to supply the great demand for this popular salad herb during the season. It may not be inappropriate here to mention that the plant commonly known in our gardens as the Nasturtium, does not belong to the Crucifers, but properly bears the name of *Tropæolum majus*. It has obtained the name of Nasturtium on account of its warm taste, a quality not unlike that of the common cress. The New Zealand Marsh Cress is edible, and was formerly eaten by the natives.

GENUS II.

BARBAREA (*Brown.*) The Herb of St. Barbara, or Winter Cress.

GENERIC CHARACTER. Stout or slender, erect, leafy, glabrous herbs, usually with angled stems, and pinnate or pinnatifid leaves. Sepals sub-erect. Petals clawed, yellow. Pods erect, elongate, compressed, 4-gonous, with keeled or costate, straight, coriaceous, many-seeded valves. Seeds oblong, in one series; cotyledons accumbent.—*Handbook of New Zealand Flora, p. 11.*

DESCRIPTION, etc.—A common European genus, of which one species was cultivated in former times in Britain, as a pot-herb. The New Zealand species, and also the Australian, are stated to be the same as the British, which is very variable. *B. vulgaris*, a double-flowered garden variety, commonly called the "Double Yellow Rocket," is very ornamental. The name, *Barbarea*, alludes to the plant being vulgarly called the "Herb of St. Barbara."

1. BARBAREA VULGARIS (*Linn.*) The Common Herb of St. Barbara.

SPECIFIC CHARACTER.—Erect, rather rigid, stout, leafy, 1–2 ft. high, with green furrowed stems. Lower leaves lyrate, pinnatifid; lobes obovate-oblong, terminal, ovate and sinuate. Upper leaves entire, sinuate, or pinnatifid. Flowers rather large. Pods stout, 1½ in. long, $\frac{1}{10}$–$\frac{1}{6}$ in. broad, erecto-patent, broader than their terete pedicels; valves veined; style short, straight.—*Handbook of New Zealand Flora, p. 11.*

DESCRIPTION, etc.—This herb is indigenous to the Northern Island, and was formerly used by the Natives as food. Upon the authority of Mr. Colenso, the native name of this plant is "Toii." In Britain, *B. vulgaris* was held as a herb of some repute, when the field or brook furnished the only salads, but was banished from the table by vegetables of better flavour.

GENUS III.

SISYMBRIUM (*Linn.*) The Mountain Cress.

GENERIC CHARECTER. Herbs, usually leafy, with slender stems and small white or yellow flowers. Sepals sub-erect or spreading. Petals clawed. Pods slender, terete or slightly compressed; valves concave, many-seeded. Seeds in one series in each cell, oblong.—*Handbook of New Zealand Flora, p. 11.*

DESCRIPTION, etc.—A British genus, abundant in the North Temperate Zone; rare in the South. The plants are uninteresting, and not easily to be distinguished from several allied genera. The name, *Sisymbrium*, is from the Latin, and alludes to "A kind of herb," perhaps, watercress.

1. SISYMBRIUM NOVÆ ZELANDIÆ (*Hook., F.*) The New Zealand Sisymbrium.

SPECIFIC CHARACTER.—Tall, very slender, 1–2 ft. high, glabrous, or covered with minute stellate pubescence. Leaves chiefly radical, spreading, 1–2 in. long, few or many, and crowded, narrow obovate, or linear oblong, sinuate-pinnatifid; lobes blunt. Flower stems very slender, sparingly-branched, with few, entire or toothed linear leaves. Flowers small, white. Petals narrow. Sepals erect. Pods $\frac{1}{2}$–2 in. long, $\frac{1}{15}$ in. broad, very narrow, linear, obtuse, glabrous, on slender pedicels; valves convex, 1-nerved. Seeds small. Cotyledons obliquely incumbent.—*Handbook of New Zealand Flora, p. 11.*

DESCRIPTION, etc.—This herb is found in the Middle Island on the Nelson mountains, and in the shingle slips of the Wairau Gorge, at an altitude of 4,500 feet. There are numerous species in Britain, of which the most common are the *S. alliaria*, or Garlic Mustard, sometimes called "Sauce alone," a tallish hedge-weed with heart-shaped leaves, white flowers and erect pods. *S. officinale*, an erect, branched plant, with rough stems and leaves, minute pale yellow flowers, and rough pods, a common hedge-weed; and *S. thalianum*, a field-weed growing from three to eight inches high, with oblong toothed leaves, and slender stems, bearing a few inconspicuous white flowers.

GENUS IV.

CARDAMINE (*Linn.*) The Bitter Cress.

GENERIC CHARACTER.—Generally slender or small herbs, with entire or pinnate leaves, and small white flowers. Sepals erect or spreading. Petals clawed or spathulate. Pod long, linear, compressed; valves flat, usually separating elastically, and curving backwards. Seeds numerous, forming one series in each cell, flattened. Cotyledons accumbent.—*Handbook of New Zealand Flora, p. 12.*

DESCRIPTION, etc.—An extensive genus common in England, and in all temperate regions, distinguished by the nerveless valves of the flat narrow pod, which, when the seeds are ripe, curl with an elastic spring from the base upwards, thus scattering the seed. The prettiest of the numerous species of this genus are British plants, which are rarely cultivated in gardens, from their great abundance in the open country. All the Cardamines are anti-scorbutic, and they are said to be very efficacious in diseases

of the heart. The derivation of the name Cardamine is from the Greek words *kardia* the heart, and *damæo* to subdue. The New Zealand species are: (1). C. HIRSUTA, leaves pinnate; (2). C. DEPRESSA, leaves spathulate; (3). C. STYLOSA, leaves sinuate lobed; (4). C. FASTIGIATA, leaves long, deeply toothed.

1. CARDAMINE HIRSUTA (*Linn.*) The Hairy Cardamine.

SPECIFIC CHARACTER.—A very variable, slender branched, rarely simple, glabrous, or slightly hairy annual, 12–18 in. high, erect or decumbent, sometimes assuming a perennial rootstock, especially near the sea. Leaves pinnate; Leaflets few, opposite, or alternate, entire or lobed, orbicular oblong-ovate, or cordate, usually on slender petioles, sometimes reduced to one. Flowering branches sometimes reduced to capillary 1-flowered scapes. Flowers small, white (sometimes 4-androus in Europe). Pods ¾–1½ in. long, slender, on slender pedicels, obtuse or produced into acuminate styles. Seeds small, pale yellow-red. *Handbook of New Zealand Flora, p. 12.*

DESCRIPTION, etc.—Fig. 1, Plate No. 6.—The "HAIRY CARDAMINE."—This herb is abundant throughout the Islands, especially in moist and shady situations. There are four recognized varieties in New Zealand, differing somewhat in habit and structure. The succulent members of the family form an excellent salad. In Britain and elsewhere in the Northern Hemisphere this plant is an annual, but, in the more equable climate of the Southern Hemisphere, it is usually a perennial. *C. hirsuta,* is a common weed everywhere in England, varying in height from six to eighteen inches, according to soil and situation. The leaves and flowers of this species form an agreeable salad. This species, and, it is said, others, produce young plants from the leaves. The Cuckoo Flower, or Lady's Smock, (*C. pratensis,*) is a common and very pretty meadow plant, with large pale lilac flowers. Its first English name is due to its blossoming when the Cuckoo sings, and its second, to the fact that its flowers are produced in such abundance as to give the meadows the appearance of a bleaching ground, covered with clothes laid on the grass to dry. These flowers are associated with pleasant memories of spring, and join with the Cowslip, Primrose and Harebell to compose many a rustic nosegay. A double variety is sometimes found wild, which is remarkably proliferous, the leaflets where they come in contact with the ground producing new plants; and the flowers, as they wither, sending up a stalked flower-bud from their centre. The plants are warmly stomachic, and have the flavour of watercress.

OTHER SPECIES OF CARDAMINE.

2. C. DEPRESSA.

A glabrous, or pilose, stemless perennial. Leaves crowded, rosulate. Flowers small, white. This species has two varieties. Found at high altitudes in the Middle Island.

3. C. STYLOSA.

A perennial 2 – 3 feet high. Leaves 3 – 5 inches long. Flowers rather small, white. Found at the Bay of Islands, and about Auckland.

4. C. FASTIGIATA.

A glabrous perennial, with a rootstock a span long, tapering, as thick as the little finger, densely clothed with the recurved bases of the old leaves, a very singular looking plant. Flowers very numerous, white. Found in the Middle Island at high altitudes.

GENUS V.

BRAYA (*Sternberg.*) The Braya, or Pachycladon.

GENERIC CHARACTER.—Alpine, densely tufted, perennial herbs, with long tap roots, rosulate radical leaves, and scapes bearing short few-flowered racemes, or corymbs. Flowers white, pink, or purplish. Sepals short, equal. Petals obovate, Stamens 6. Pod short, thick, ovate or oblong; valves convex, with a short costa, or keeled; Septum entire, or open; style very short; Stigma capitate. Seeds in 1 or 2 series; funicles very short; cotyledous incumbent.—*Handbook of New Zealand Flora, p. 13.*

DESCRIPTION, etc.—An Arctic genus, also found, but rarely, in the loftiest Alps of Europe, Northern Asia, and North and South America.

1. BRAYA NOVÆ ZELANDIÆ (*Hook., F.*) The New Zealand Braya.

SPECIFIC CHARACTER.—A very short depressed Alpine herb, covered with stellate pubescence, root long, tap-shaped, as thick as the finger, bearing one or several equally thick, erect or ascending cylindric branches, covered with scars of old leaves, and surmounted by a head of small imbricating leaves that spread out horizontally. Leaves $\frac{1}{8}$–$\frac{1}{4}$ in. long, oblong, pinnatifidly lobed, narrowed into flat short petioles; those on the scapes with longer petioles, and a minute obovate blade, which is digitately lobed at the top. Scapes or peduncles very numerous, rising from the root below the leaves, shorter than these, and spreading horizontally, 3–5 flowered. Flowers not seen. Pod $\frac{1}{6}$–$\frac{1}{5}$ in. long, about half as broad, laterally compressed; septum incomplete. Seeds 3–5 in each valve, obovoid.—*Handbook of New Zealand Flora, p. 13.*

DESCRIPTION, etc.—Fig. 2, Plate No. 6.—The "NEW ZEALAND BRAYA."—This remarkable little Alpine plant is found in the *débris* of schist, on Mount Alta, in the Wanaka Lake district, in exposed ridges not under an altitude of 5000 feet, or in the crevices of rocks, where it is often surrounded by snow. The progress of flowering and seeding is very rapid in this plant, as the heat during the day in sunshine at these high altitudes is intense, producing a rapid growth Our plate depicts the plant with flower and seed. The flowers are white, and are described by Mr. John Buchanan, F.L.S., as $\frac{1}{4}$ of an inch long. Sepals obovate, obtuse, petals longer than the sepals, upper half round, tapering below to a narrow point.—"*Alpine Flora*," *Vol. XIV.*, "*Transactions New Zealand Institute.*" It may be noted that for want of information a description of the flowers of this plant is not given in the "*Handbook.*"

GENUS VI.

LEPIDIUM (*Linn.*) The Lepidium.

GENERIC CHARACTER.—Herbs sometimes with an almost woody stem, toothed, or pinnatifid leaves, and white, sometimes unisexual flowers. Stamens, 4 or 6. Pods, broad, much flattened laterally, obtuse, winged or keeled at the back; Cells 1-seeded. Cotyledons incumbent.—*Handbook of New Zealand Flora, p. 14.*

DESCRIPTION, etc.—An extensive genus spread throughout the temperate regions of the earth, and common in England. To this genus the Garden Cress belongs, *L. sativum;* also the *L. ruderale*, a common Australian and European annual, with linear leaves. The New Zealand species consist of:—(1). L. OLERACEUM, leaves more or less toothed; (2). L. SISYMBRIOIDES, leaves pinnatifid; (3). L. INCISUM, leaves pinnatifid.

1. LEPIDIUM OLERACEUM (*Forst.*) The Esculent Lepidium.

SPECIFIC CHARACTER.—Sub-erect, perennial, glabrous, 10–18 in. high; Stem, stout, woody, scarred, branched, smelling disagreeably when bruised. Leaves, obovate-cuneate or oblong-spathulate, 1–3 in. long, lower serrate, upper more entire. Flowers, numerous, white, small, 4-androus. Pods on slender spreading pedicels, ovate, sub-acute, $\frac{1}{6}$ in. long, not winged on back.—*Handbook of New Zealand Flora, p. 14.*

DESCRIPTION, etc.—This plant is confined to New Zealand, and is to be found growing in sheltered places on the sea shores throughout the Islands. It is a good anti-scorbutic, and was eagerly sought after by early voyagers as a remedy for the dreaded Scurvy, with which the crews were so frequently affected. The Maoris call it "Nau;" and it is stated that they formerly cultivated it as a pot herb. When broken or bruised, the plant emits a strong and unpleasant odour. The natives of the Society and Sandwich Islands make use of *L. piscidium* for catching fish, it, in common with several other plants, possessing the property of intoxicating them, so that they float upon the surface in a helpless, insensible state, and are then easily taken. *L. sativum*, the common Garden Cress, is a hardy annual, whose native country is stated to be Persia. This has been in cultivation in England since 1548. It is very generally cultivated and esteemed as a plant most useful for making small salads.

OTHER SPECIES OF LEPIDIUM.

2. L. SISYMBRIOIDES.

An erect, slender plant, a span high. Leaves small, linear, pinnatifid. Flowers small, white. Found in the Middle Island on dry, grassy flats and plains.

3. L. INCISUM.

DESCRIPTION, etc., Fig. 3, Plate No. 6.—The "CUT-LEAVED LEPIDIUM."—A prostrate plant, lower leaves on long petioles, pinnatifid. Flowers in small axillary or terminal, few-flowered, racemes. Found in the Northern Island, on the beach at Port Nicholson. Very rare. Professor Kirk says that he has never seen a specimen of this plant, which appears to be extremely local. Mr. Colenso, he further says, is the only living botanist who has met with it, and the place at which he found it has not proved productive of late years. We are indebted to Mr. Buchanan for the specimen given in our plate.

GENUS VII.

NOTOTHLASPI (*Hook., F.*) The Notothlaspi.

GENERIC CHARACTER.—Herbs with numerous spathulate, thick, radical leaves. Flowers, rather large, white. Sepals, erect. Pods, very much flattened; Valves winged; Cells, very many, seeded. Seeds on very slender funicles; radicle, incumbent, sometimes very long.—*Handbook of New Zealand Flora, p. 14.*

DESCRIPTION, etc.—A genus confined to New Zealand, consisting of the following species:—(1). N. ROSULATUM; (2). N. AUSTRALE (*Hook., F.*); (3). N. NOTABILIS (*Buch.*)

1. NOTOTHLASPI ROSULATUM (*Hook., F.*) The Rosette Notothlaspi.

SPECIFIC CHARACTER.—A very stout, erect, densely leafy pyramidal fleshy herb. Stem, 0. Leaves, numerous, densely crowded, forming a rosette; spathulate-petioled, crenate; when young, covered with weak, cellular hairs, glabrous when old. Scape often thicker than the finger; a span high, bearing a profusion of sweet-scented flowers. Pods, $\frac{1}{2}$–1 in. long, obovate, etc.—*Handbook of New Zealand Flora, p. 15.*

DESCRIPTION, etc., Fig. 4, Plate No. 6.—The "ROSETTE NOTOTHLASPI."—This remarkable little alpine is confined to the Middle Island, and is found on the shingle beds of the Ribbon Range, Mount Torlesse, Waimakariri Valley, and in other places on the Alpine ranges, from 3,500 to 6,500 feet altitude. The leaves are arranged in the form of a rosette, and are from 1–1$\frac{1}{2}$ in. long. The flower scape, rising 5 inches or so out of the centre of the plant, is covered with a profusion of creamy-white flowers, which exhale a rich perfume as of orange blossoms. The general appearance of the plant is pyramidal, and altogether presents to the eye and fancy of the botanist a form unique, and not to be passed unheeded. It is exceedingly prized by collectors, who subject themselves to much danger and many hair-breadth escapes to secure this much-coveted treasure. The plant being very rare, necessitates both long and hazardous journeys, until the securing of a few specimens stimulates the weary climbers to renewed activity amidst the snows, rain and fogs of the Southern Alps.

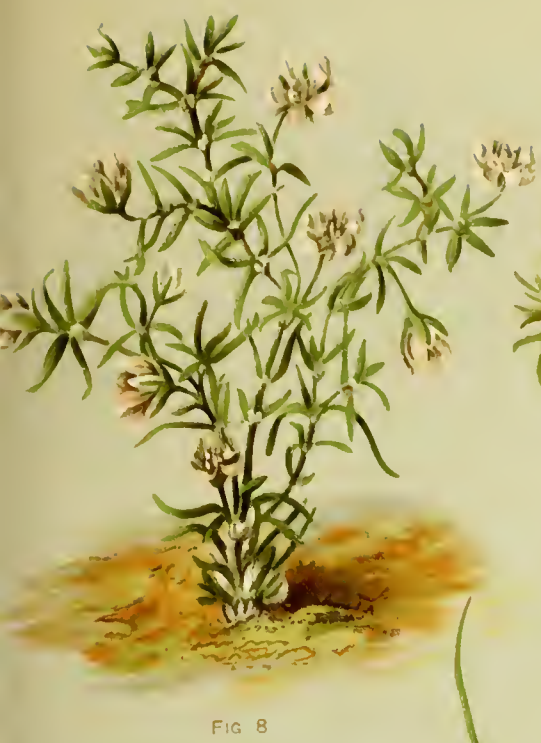


FIG 8

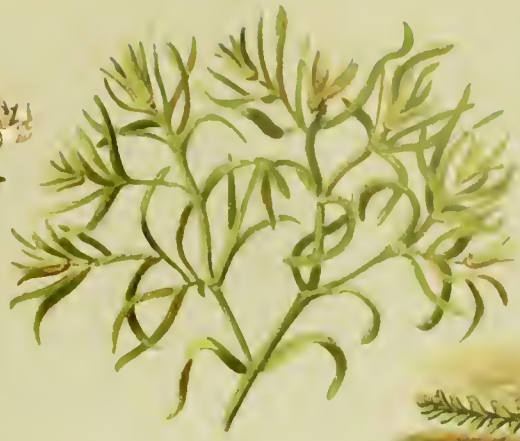
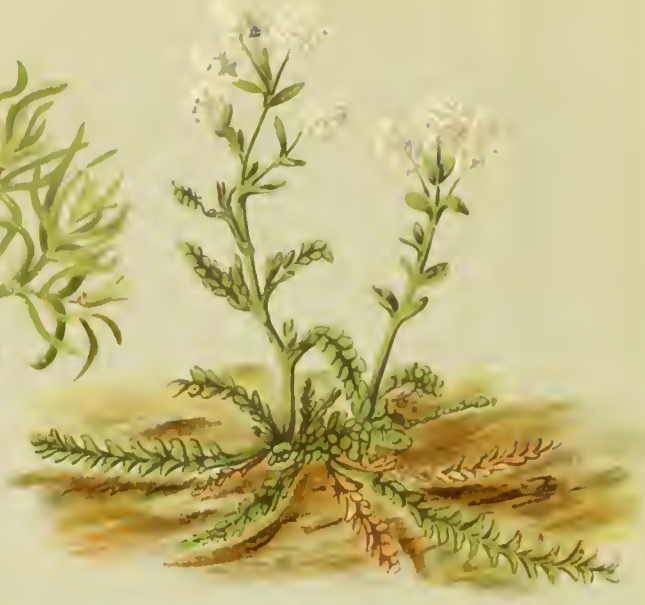


FIG. 5



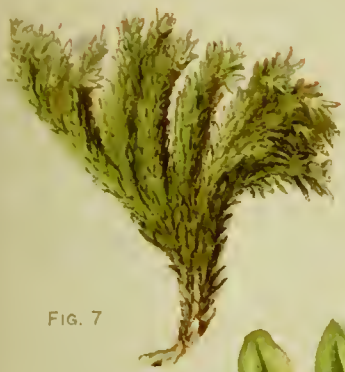
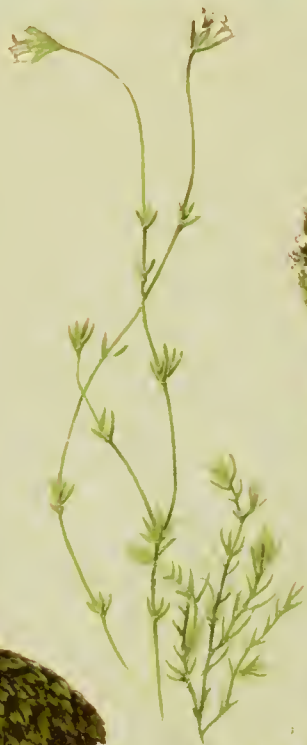


FIG. 7

FIG. 1



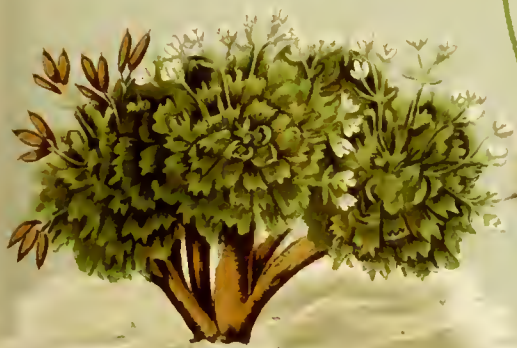
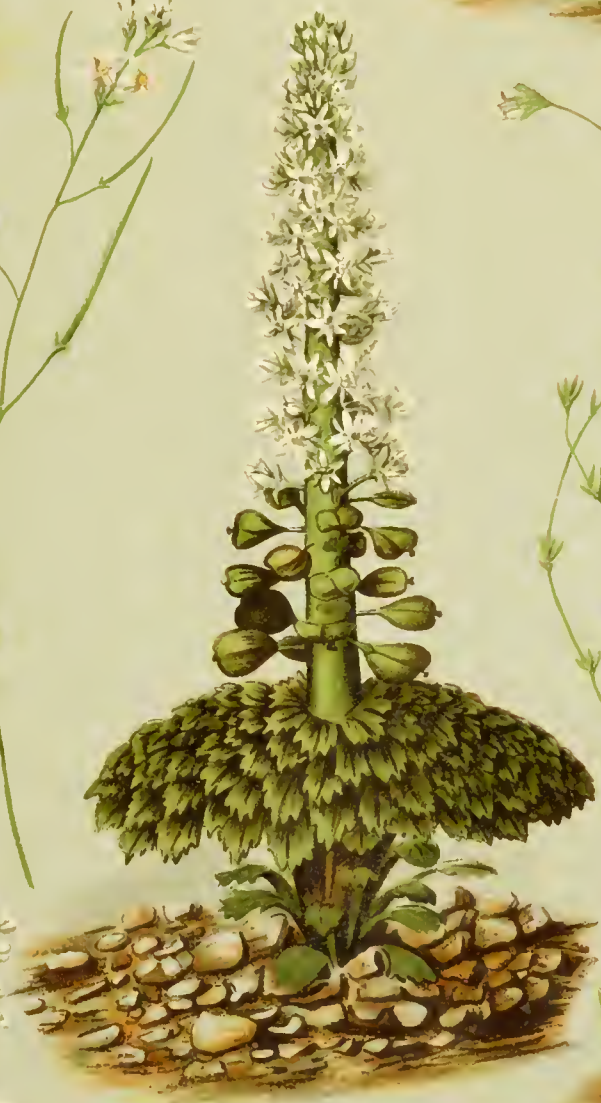


FIG. 2



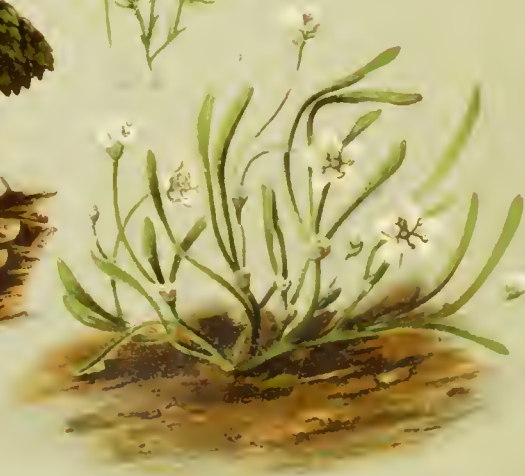


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Fig 1.—CARDAMINE HIRSUTA. Fig. 2.—BRAYA NOVÆ ZELANDIÆ. Fig. 3.—LEPIDIUM [illegible]. Fig. 4.—NOTOTHALSPI ROSULATUM
Fig. 5.—STELLARIA ROUGHII. Fig. 6.—STELLARIA GRACILENTA. Fig. 7.—COLOBANTHUS [illegible]RIS Fig. 8.—SPERGULARIA RUBRA
Fig. 9.—CLAYTONIA AUSTRALASICA Fig. 10.—HETEROPELIA CESPITOSA.

2. N. AUSTRALE.

Likewise an Alpine plant; is a small perennial, densely-tufted, much-branched, and glabrous, with short leafy branches, and very numerous white corymbose flowers. Branches, 1–2 in. long. Leaves petiolate, $\frac{1}{2}$–$1\frac{1}{2}$ in. long, spathulate, oblong, often re-curved. The flowers of this species are scentless. It is found only in the Middle Island, Nelson District, at an altitude of from 4,000 to 5,000 feet.

3. N. NOTABILIS. New species.

This remarkable little alpine agrees in several details with the description of *N. rosulatum*, given above; that species, however, being described as a pyramidal, fleshy herb, with a scape sometimes thicker than the little finger, and a span high; whereas, *N. notabilis*, is a small, circular, densely-leaved plant, with the inflorescence forming a terminal sphere of small white flowers. It has no stem, the leaves being arranged like a miniature umbrella, surmounted by a small, dense ball of white flowers. This addition to our New Zealand Flora is due to Mr. J. Buchanan, F.L.S., one of our most enthusiastic field and indoor botanists, who first discovered it, in the year 1881, at the head of Lake Ohau, at an elevation of 3,000 feet.

Chapter IV.

Order IV.—VIOLARIEÆ. (The Violet Family.)

Character of the Order.—Herbs or shrubs, with alternate stipulate leaves. Flowers, regular or irregular. Sepals, 5, imbricate. Petals, 5, imbricate. Stamens, 5, hypogynous; anthers sessile, or on short filaments, often united, the connective usually expanded upwards, or provided with an appendage at the back or both. Ovary with 2–5 parietal placentas, and one style. Fruit, a capsule or berry. Embryo axile in fleshy albumen.—*Handbook of New Zealand Flora, p. 16.*

Description of the Order.—

WIDELY distributed through tropical and temperate regions, this order contains between two and three hundred known species, dispersed over nearly all parts of the globe, and distributed into twenty-one genera, forming four tribes. The New Zealand genera consist of:—(1). Viola, herbs with trailing stems or short woody stocks; (2.) Melicytus, shrubs with short petioled toothed leaves; and (3.) Hymenanthera, woody shrubs with alternate leaves and small axillary flowers.

Genus I.

VIOLA (*Linn.*) The Violet.

Generic Character.—Herbs with trailing stems or short, woody stocks. Leaves alternate, petioled, stipulate. Flowers irregular. Sepals 5, produced at the base. Petals unequal, spreading, lowermost often larger, spurred or gibbous at the base. Anthers 5, connective, flat, produced into a thin membrane; the lower often spurred. Style, capitate. Capsule, 3-valved, with a parietal placenta on each valve.—*Handbook of New Zealand Flora, p. 16.*

Description, etc.—A large British and widely diffused genus in all temperate climates, of which several species produce two forms of flowers. The British species

consists of two groups, those with flowers growing from the crown of the apparent stemless plant, and represented by *V. odorata*, the Sweet Violet, and its varieties; and those with the stems evident, and flowers springing from the axils of the leaves, which are alternate, on more or less branched stems, the latter group represented by *V. canina*, the Dog Violet, and *V. tricolor*, the Pansy. The New Zealand species are (1). *V. filicaulis;* (2). *V. Lyallii;* and (3). *V. Cunninghamii.*

1. VIOLA FILICAULIS (*Hook., F.*) The Thread Stemmed Violet.

SPECIFIC CHARACTER.—Very slender, perfectly glabrous. Stems filiform, prostrate or creeping. Leaves alternate, orbicular-cordate, or broadly ovate-cordate, obtuse or acute, obtusely crenate; petioles 1–3 in. long; stipules lacerate, the teeth filiform, tipped with a gland; peduncles very slender, flowered; bracts subulate, more or less lacerate like the stipules. Flowers very pale blue, ¼–⅔ in diam. Sepals linear-lanceolate, acuminate. Spur very short. *Handbook of New Zealand Flora, p. 16.*

DESCRIPTION, etc.—Fig. 1, Plate No. 7.—The "NATIVE VIOLET."—This little plant is common to both the Northern and Middle Islands as far south as Otago, and is abundant in many districts in damp situations, but in some localities it has nearly disappeared, particularly in light soils. It has no fragrance, and cannot, as a plant, compare with the European species for size or appearance, but it claims the distinction of being a member of the family, and therefore is worthy of our attention and regard. It has been introduced into many colonial gardens, and is much cherished for its simple beauty. The species belonging to the order Violarieæ, and best known, are the Violet and the Heartsease, or Pansy. The *Viola odorata*, or common Sweet Violet is a favourite flower in every garden, and has a delightful fragrance. It is a native of Britain, indeed of the whole of Europe, and part of Asia, extending it is said even to China and Japan. It is generally believed that this species is the Violet of the ancients, as described by Dioscorides, who recommends it for its medicinal virtues, as well as for its beauty and fragrance. There are numerous varieties of this species, of these some are white, purple, and blue; and some of all these are double-flowering. The most interesting, and those most generally cultivated, are the varieties known as the Neapolitan and Russian. The Neapolitan Violet is a pale blue, fragrant, but its chief recommendation consists in its generous nature of flowering during winter. The Sweet Violets are variable in colour, the flowers being sometimes blue, while sometimes they are white or lilac. The white variety is both the earliest and latest in blooming, and is very sweet scented. The Dog Violets are perhaps so called from their want of scent, and so relegated to the dogs, as a worthless commodity. The endless varieties of Heartsease or Pansy, are derived from the admixture of the cornfield weed, *V. tricolor*, with the alien species *V. altiaca*, from Tartary, and *V. grandiflora*, from Switzerland.

The Violet has ever been with poets a favourite flower, and a subject of poesy. Roman dames perfumed their baths with its fragrance, and its abundant presence at ancient regal banquets filled the air with overpowering incense. The great Napoleon accepted it as the emblem of his Imperial dynasty, and when he, who thought to rule the world, was banished to Elba, "To return in Spring," was the meaning it conveyed to his adherents. The name of Viola is said to be derived from Io, the daughter of Machus, King of Argos, who was transformed into a cow by Jupiter, and is fabled to have eaten Violets as the first food she took. Bunches of Violets, if laid away when fresh, in the pockets or sleeves of dresses, impart a delicious odour of the flower. The blossoms must be quite dry, and should be removed when they become scentless. It is said that Josephine's boudoir at Malmaison is impregnated to this day with the odour of Violets, owing to the quantities of that flower with which the room was kept constantly supplied.

"But sweeter than the lids of Juno's eyes,
Or Cytherea's breath."
—*Winter's Tale.*

OTHER SPECIES OF VIOLA.

2. V. LYALLII.

A plant entirely similar to *V. filicaulis*, in most respects, but the stipules and bracts are generally more green and always entire, usually obtuse, and the flowers are smaller. It is found in various places in both the Northern and Middle Island.

3. V. CUNNINGHAMII.

A plant very variable in size, stem short, much branched, often thickening into a short woody stock. Leaves tufted on the top of the root or stem, or on very short branches from it. Peduncles slender. Flowers $\frac{1}{3}-\frac{2}{3}$ inches in diameter, and pale blue, scentless. Very common in moist places from the middle of the Northern Island, southwards, ascending to 5,000 feet. It is also found in the Middle Island and in Tasmania.

GENUS II.

MELICYTUS (*Forst.*) The Honey Trees.

GENERAL CHARACTER.—Shrubs, with short petioled, toothed, minute stipuled leaves. Flowers axillary, fascicled, small, regular, almost unisexual or polygamous. Sepals 5. Petals 5, short, spathulate, spreading. Anthers 5, free; connective produced into a membrane, and furnished with a scale at the back. Style 3 6-fid, or with a discoid stigma. Berry, with a few or many angled seeds, on 3 6 placentas.—*Handbook of New Zealand Flora, p. 17.*

DESCRIPTION, etc.—This genus is confined to New Zealand, Norfolk Island, and belongs to the equal-petaled division of the order. The genus consists of four species:

(1.) *M. ramiflorus;* (2.) *M. macrophyllus;* (3.) *M. lanceolatus;* (4) *M. micranthus,* large woody shrubs or small trees, with long, smooth, serrated, short-stalked leaves, and little bundles of small fragrant flowers on the branches, having one or more bracts. The flowers are usually of separate sexes, and borne on distinct plants; they are said to contain abundant supplies of honey. The name of the genus means literally "Honey receptacles," due to the secretion of abundant nectar in the flowers of the plants.

1. MELICYTUS RAMIFLORUS (*Forst.*) The Flowering-branched Melicytus.

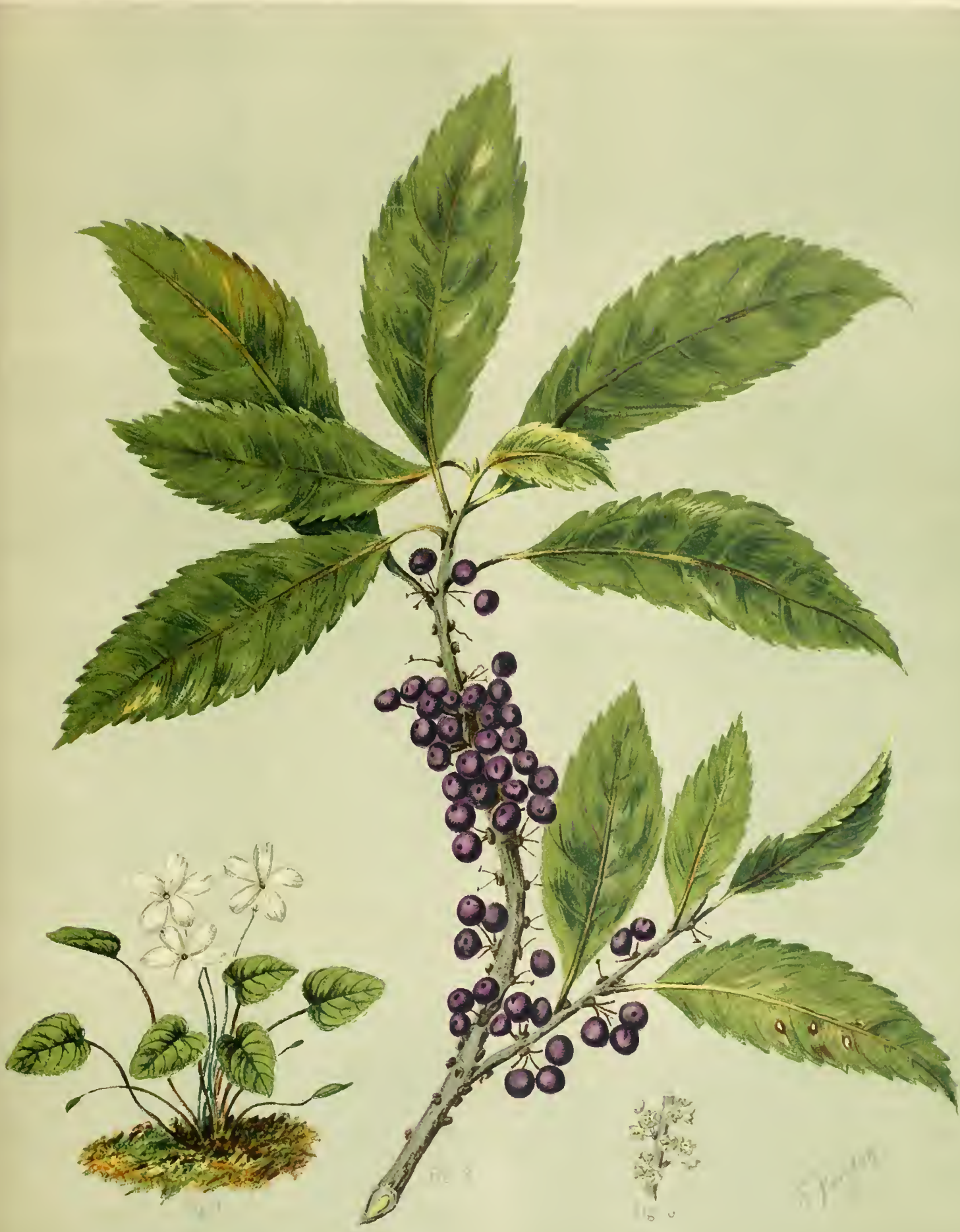
SPECIFIC CHARACTER.—A glabrous, white-barked small tree, or large shrub, 20–30 feet high; trunk often angular, branches brittle. Leaves alternate, 4–5 in. long, oblong-lanceolate, accuminate, serrate with small obtuse teeth, sometimes obscurely so; petioles slender; stipules deciduous. Flowers small, in fascicles on the branches; peduncles slender ¼–½ in. long, with 2 minute bracts. Flowers minute ⅛ in. diam. Calyx lobes spreading, green. Anthers obtuse; stigma almost sessile, 6-lobed. Berry small, ⅛ in. diam.—*Handbook New Zealand Flora. p. 17.*

DESCRIPTION, etc.—Fig. 2., Plate No. 7—The "Hinahina," or "Mahoe."—This shrub, or small tree is abundant throughout the Islands, in lowland districts. The wood is soft, of a white colour and useless for constructive purposes, though occasionally it is used for temporary fencing; and is burnt as firewood. The tree sometimes attains a height of thirty feet, but the trunk rarely exceeds two feet in diameter. Horses and cattle are greedily fond of the pale green foliage, and eat it without harm to themselves. The tree produces enormous numbers of flowers of a greenish-yellow hue, conspicuous by their mass; they are fragrant and afford an abundant supply of nectar The flowers are polygamous, both male and female, growing on the same tree. When the "Hina-hina," or "Mahoe," as the tree is called by the natives in some districts, is in berry, it is much frequented by the small native birds, who feed upon the fruit with which it is densely covered. The berries are about the size of a pea, a bright violet colour in the light, but appear nearly black in the shade. In flavour they are slightly sweet but not very palatable. The tree has been planted in shrubberies with success, and is raised by nurserymen for sale, it being deemed worthy of propagation. Young trees transplanted from the woods take kindly to new homes, provided that they have good shelter. The Hina-hina is not known to possess any medicinal virtues; the berries are innocuous, and are eaten by the natives.

OTHER SPECIES OF MELICYTUS.

2. M. MACROPHYLLUS (*A. Cunn.*)

A large glabrous bush 4–7 feet high, with a pale brown bark, and leaves rather smaller, but more coriaceous, (leathery) and broader than those of *M. ramiflorus.* The



1. VIOLA FILICAULIS.—Native Violet. 2. MELICYTUS RAMIFLORUS.—Hinahina. 3. Flower of Hinahina.

flowers are twice as large as those of *M. ramiflorus*, and hang in fascicles of 4 or 6, on the branches; they are yellowish in their lower parts, the tips of their petals having a purple tinge. The berries are $\frac{1}{4}$ of an inch in diameter. As far as is known, this plant is confined to the northern part of the Northern Island, and is easily distinguished from *M. ramiflorus* by its coarser habit, broader and more leathery leaves, and larger flowers and berries.

3. M. LANCEOLATUS (*Hook., F.*)

A slender shrub, or small tree, 10–12 feet high, with brittle branches and dark-brown bark. The leaves are from 4–7 inches long. The flowers are small, two or three together. The berry is oblong, and $\frac{1}{6}$ of an inch in diameter. It is found on the West Coast of the Northern Island.

4. M. MICRANTHUS (*Hook., F.*)

A small rigid shrub, with tortuous branches, covered with grey or brown bark. The leaves are small and scattered, $\frac{1}{3}$–$\frac{1}{2}$ an inch long. The flowers are unisexual, very minute, and grow on the axils of the branches. The berry is as small as a mustard seed. The shrub is found on the East Coast and in the interior of the Northern Island, and in the northern part of the Middle Island. It is a plant of very different habit and appearance from any of the preceding species.

GENUS III.

HYMENANTHERA (*Brown.*) The Hymenanthera.

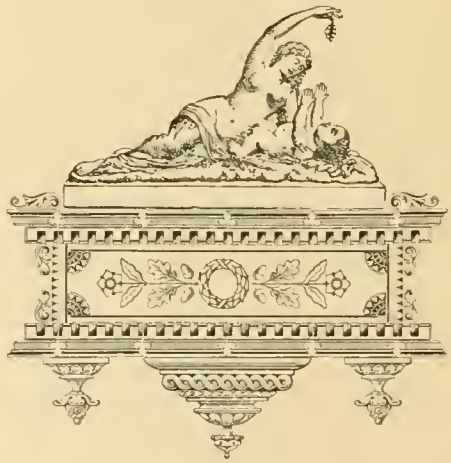
GENERIC CHARACTER.—Woody shrubs, with alternate or fascicled, entire or toothed, minutely stipuled leaves, with small axillary, solitary, fascicled, sometimes unisexual flowers. Sepals, 5. Petals, 5, short. Anthers, sessile, connate, connective, produced into a membrane, and furnished with a scale at the back. Style short, with a 2-lobed stigma. Berry small with 2 or few globose seeds on 2 placentas.—*Handbook of New Zealand Flora, p. 18.*

DESCRIPTION, etc.—A small genus, native also of Norfolk Island, Tasmania, and South Eastern Australia; the species are very variable in foliage. The genus is named from Hymen, the god of marriage, in consequence of the anthers being connate, or united in pairs.

1. HYMENANTHERA CRASSIFOLIA *(Hook., F.)* The Thick-leaved Hymenanthera.

SPECIFIC CHARACTER.—A small shrub, 2–4 feet high, rigid, stout, tortuous branches, rarely sending out straight shoots. Branchlets, pubescent. Bark, white. Leaves, very variable, thickly coriaceous, common form linear-spathulate, 2–3 inches long, but on young shoots often larger, broader, sinuate or toothed; and in older, shorter, obtuse, veined, when dry. Petioles, short. Stipules very minute and deciduous. Flowers very small, solitary or few together, axillary. Pedicels short, stout, curved, with one concave appressed bract. Sepals, orbicular, erose or ciliolate. Petals, linear-oblong. Anthers recurved, connate into a membranous lobed tube, the lobes ciliolate. Berries ¼ in. diameter, blue-purple.—*Handbook of New Zealand Flora, p. 18.*

DESCRIPTION, etc.—This small maritime shrub is found in certain localities in the Northern Island, but is not common, the only places reported being in the northern portion of the Auckland provincial district, and again in the Wellington district at Cape Palliser. In the Middle Island it is known only at Nelson. The berries, which are large in proportion to the size of the shrub, are succulent, but not edible. In growth, it is of a tortuous habit, rarely sending out straight shoots, and has white bark. The genus is common to a portion of Australia.



Chapter V.

Order V.—PITTOSPOREÆ. The Pitchy Seed Family.

Character of the Order.—Shrubs or trees with alternate or whorled exstipulate evergreen leaves, and regular flowers. Sepals 5, imbricate. Petals long, with erect claws and spreading limbs, imbricate. Stamens 5, free, hypogynous, erect, with oblong or sagittate anthers. Ovary 1 or 2, rarely 3–5 celled (often imperfectly) with a short or long style. Ovules many, placentas attached to the septa. Capsule usually bursting by woody valves, which bear the placentas on the middle. Seeds with a minute embryo in hard albumen.—*Handbook of New Zealand Flora, p. 18.*

Description of the Order.—

HIS order, which is a small one, is found chiefly in Australia. It is represented only by *Pittosporum* in India and its islands; the isles of the Pacific, and on the continent of Africa. In America it is unknown. In New Zealand it consists of one genus only, divided into more than twelve species. The name of the order is due to the pitchy, or glutinous matter which envelopes the ovules, or seeds.

Genus I.

PITTOSPORUM. *(Linn.)* The Pittosporum.

Generic Character.—Flowers often polygamous. Sepals free. Petals usually recurved. Filaments subulate. Ovary perfectly, or imperfectly 2–5 celled. Capsule woody or coriaceous. Seeds immersed in a transparent gluten.—*Handbook of New Zealand Flora, p. 18.*

Description, etc.—In New Zealand this genus embraces the following species, besides a few others which have been added of late years:—(1.) P. TENUIFOLIUM;

(2.) P. COLENSOI; (3.) P. PATULUM; (4.) P. REFLEXUM; (5.) P. RIGIDUM; (6.) P. OBCORDATUM; (7.) P. FASCICULATUM; (8.) P. CRASSIFOLIUM; (9.) P. UMBELLATUM; (10.) P. EUGENIOIDES; (11.) P. CORNIFOLIUM; (12.) P. PIMELEOIDES. Of these, the first six have alternate leaves, with flowers solitary or two together, axillary; the remainder have likewise alternate leaves, excepting the last two, which have their leaves whorled; the flowers of these latter are either fascicled, corymbose, or panicled.

1. PITTOSPORUM TENUIFOLIUM (*Banks & Sol.*) The Thin-leaved Pittosporum.

SPECIFIC CHARACTER.— A bush or small tree, 20–40 ft. high, with slender trunk; young shoots and leaves often pubescent. Leaves 1–2 in. long, broadly oblong or elliptic-obovate, obtuse, acute or accuminate, quite entire, undulate, rather membranous, glabrous or pubescent on the mid-rib. Petiole short. Flowers axillary, solitary, on curved pubescent peduncles as long or longer than the calyx, variable in size $\frac{1}{4}$–$\frac{3}{4}$ in. long. Sepals very variable in form and shape, from broadly-ovate to linear-oblong, silky or glabrous. Petals dark purple. Ovary pubescent. Capsule size of a small nut, usually 3-valved, broadly-obovoid, downy when young, glabrous and rugose when old.—*Handbook of New Zealand Flora, p. 19.*

DESCRIPTION, etc.—Fig 1, Plate No. 8.—This small evergreen tree, known by the native names of "Kowhiwhi," or "Maupariki," abounds on the eastern coasts of both Islands. It does not attain any great height, and seldom exceeds from 10–12 inches in the thickness of its trunk. It is found in almost any little clump of bush, and presents a very pleasing and neat appearance. The wood is white, and adapted for turnery of a light character, otherwise it is valueless. Even as firewood it is despised, and bears the all too suggestive name of "Bucket of Water Wood," so little is it calculated by its combustive properties to enliven the domestic hearth. As a garden hedge, it forms one of the best, and is very ornamental. As an addition to a shrubbery it is pretty and attractive. Young plants may be purchased from nurserymen, in common with other Pittosporads, or they can be easily transplanted from their native homes in the bush. The genus *Pittosporum* is abundant in Australia, and supplies of seedlings are, in each planting season, introduced into New Zealand for sale as garden shrubs, and are much prized. There is no reason whatever that our own native plants should not be as much esteemed and cultivated; they are equally as suitable for garden purposes, and quite as ornamental. The Kowhiwhi blossoms in early summer, the flowers are solitary, and of a brownish-crimson colour. The capsule, or seed pod, is about the size of a small nut, and contains the seeds, which are immersed in hard albumen. When ripe, the woody capsule bursts open and discloses the seed.

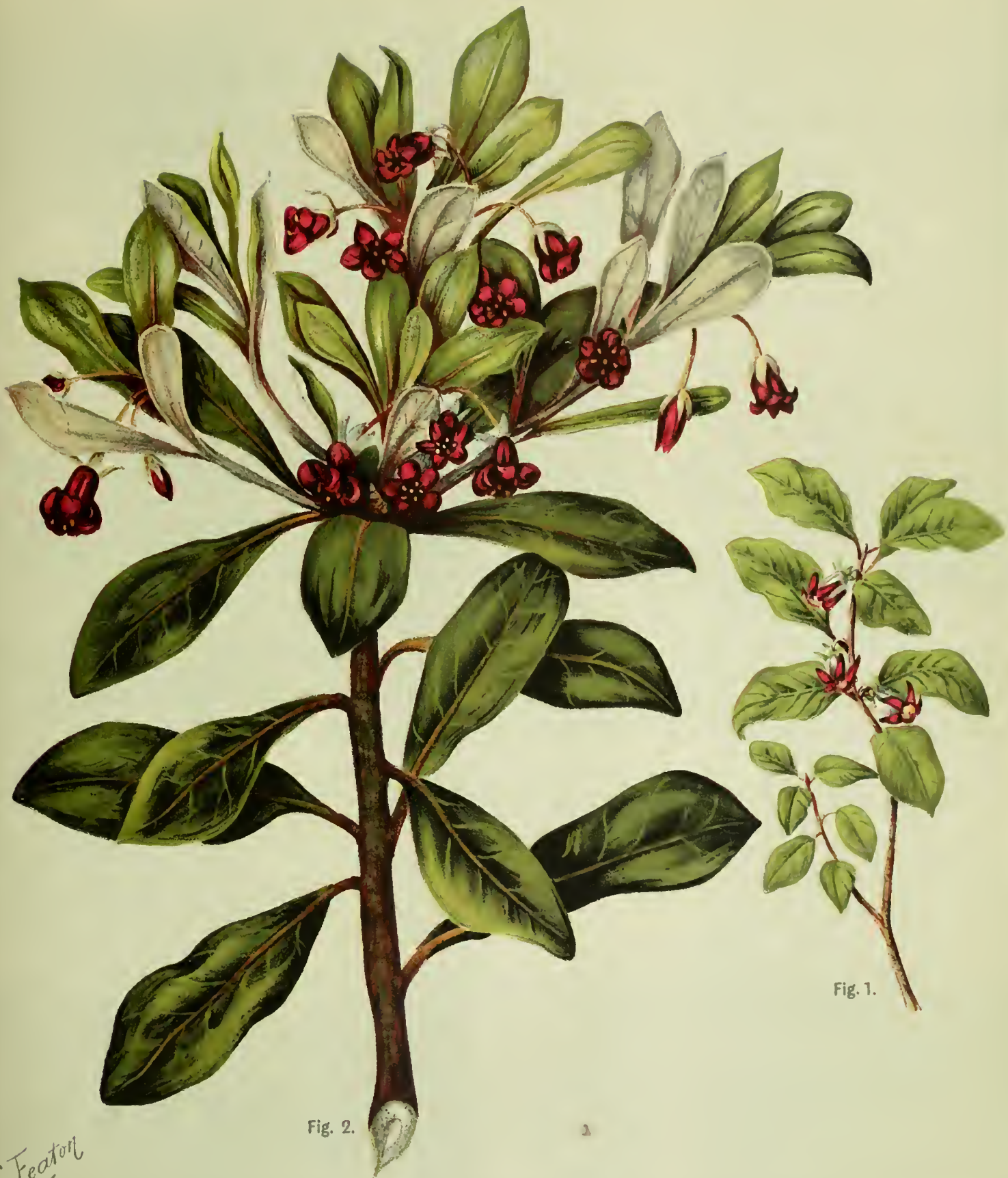


Fig. 1.

Fig. 2.

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BOCK & COUSINS, CHROMO-LITHO

1. KOWHIWHI.—Pittosporum tenuifolium. 2. KARO.—Pittosporum Crassifolium.

2. PITTOSPORUM COLENSOI (*Hook., F.*) Mr. Colenso's Pittosporum.

SPECIFIC CHARACTER.—A small tree very closely allied to *P. tenuifolium*, if not a variety of it; but the leaves are larger, more acute, coriaceous, and not undulated; the peduncles shorter than the sepals, both of which are always glabrous; and the scarious bracts at the base of the peduncles are very persistent. The fruit is also smaller and rounder.—*Handbook of New Zealand Flora, p. 19.*

DESCRIPTION, etc.—This species is common only to the Northern Island, and is found on the East coast and in the interior. It is closely allied to *P. tenuifolium*, and is, in consequence, difficult to identify; more especially as, in some specimens, the leaves are almost as undulate as *P. tenuifolium*. As in the rest of the genus, the wood is of little value.

3. PITTOSPORUM PATULUM (*Hook., F.*) The Spreading Pittosporum.

SPECIFIC CHARACTER. — Branches stout, glabrous; branchlets puberulous. Leaves patent, or recurved, 1–1½ in. long, ⅓ in. broad, very narrow, linear-oblong, narrowed at the base, obtuse, crenate-serrate, very coriaceous and shining. Fruit globose, or broader than long, woody, ½ in. diameter, compressed, on a short, stout, axillary peduncle.—*Handbook of New Zealand Flora, p. 19.*

DESCRIPTION, etc.—This is an Alpine species, and grows on the Wairau Mountains in the Nelson district, at an altitude of 5,000 feet. It is a most distinct-looking species, but does not appear to be much known.

4. PITTOSPORUM REFLEXUM (*R. Cunn.*) The Recurved-leaved Pittosporum.

SPECIFIC CHARACTER.—A small slender much branched shrub, 2–3 ft. high, with almost filiform silky pubescent twigs. Leaves numerous, patent, recurved, very slender linear lanceolate, acuminate, membranous, quite entire ⅝–1¼ in. long, ⅛ in. broad. Flowers not seen. Peduncles solitary, terminal, short curved, pilose, 1–2 flowered. Ovary hirsute. Capsule ovoid, acuminate, ⅓ in. long, compressed, 2-valved, valves with the tips recurved.—*Handbook of New Zealand Flora, p. 20.*

DESCRIPTION, etc.—This small and slender species is indigenous to the Auckland district, north of the Bay of Islands, and is mostly to be found in thickets. It is considered valueless.

OTHER SPECIES OF PITTOSPORUM.

5. P. RIGIDUM (*Hook., F.*) The Rigid Pittosporum.

A rigid, much-branched shrub; branches tortuous, woody, stout, spreading. Leaves small, shining, ½ in. long. Flowers axillary, solitary. Petals, dingy purple, nearly as long as the leaves. Found in the Northern Island near the Waikare Lake, and on the Ruahine Mountains; likewise in the Middle Island, on the Nelson Mountains.

6. P. OBCORDATUM (*Raoul.*) The Heart-shape leaved Pittosporum.

A shrub or small tree, glabrous, with divaricating, rather slender branches. Bark pale, leaves small, ⅛ in. long, remote or 2 or 3 together, rounded or obcordate, sinuate,

crenate or quite entire, suddenly contracted into a very short petiole, rather coriaceous; nerves obscure. Flowers $\frac{1}{4}$ in. long, solitary or two together, on short puberulous peduncles, white; sepals very slender; petals narrow-linear; ovary pubescent. Fruit unknown. This species is found in the Middle Island in shady woods, near Akaroa in the Canterbury district, and is the only white-flowered species.

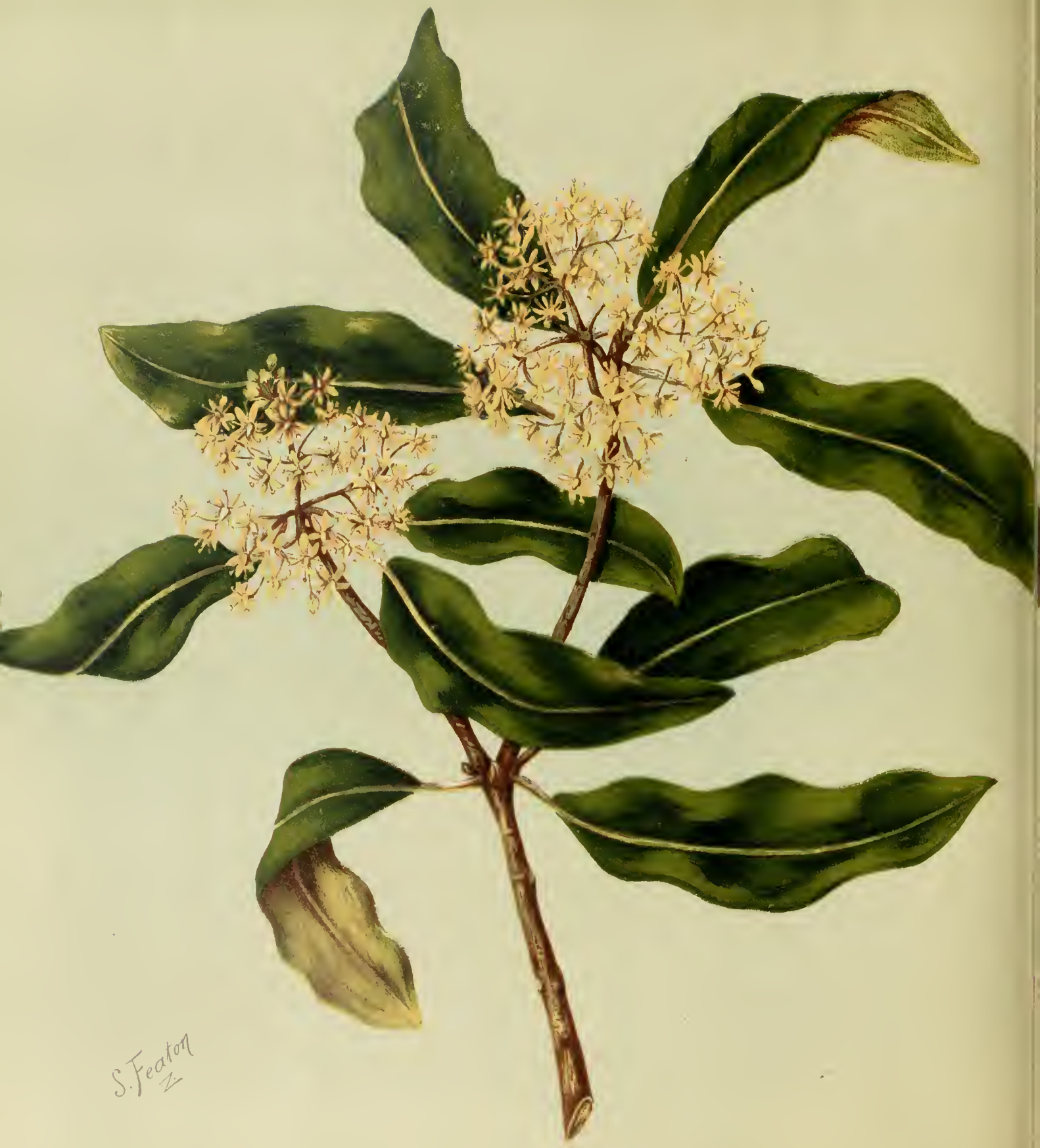
7. P. FASCICULATUM (*Hook., F.*) The Fascicled Pittosporum.

A branching shrub with glabrous leaves and branches, and inflorescence tomentose. Leaves alternate, coriaceous, obovate-oblong, acute, quite entire, pale beneath; petioles $\frac{1}{3}$ in. long. Flowers densely fascicled, axillary and terminal. Sepals ovate lanceolate. Petals linear-oblong, deep purple, $\frac{1}{3}$ in. long. Capsule on a curved pedicel, $\frac{1}{2}$–$\frac{3}{4}$ in. long. like that of *P. tenuifolium*, 2–3-valved. Found in the Northern Island at Lake Taupo, in the Middle Island at Chalky Bay, and in the Otago district, but not common. This species is closely allied to *P. tenuifolium;* but the flowers are densely fascicled, and the leaves are rather longer, and more like those of *P. Colensoi.*

8. PITTOSPORUM CRASSIFOLIUM (*Banks & Sol.*) The Thick-leaved Pittosporum.

SPECIFIC CHARACTER.—A shrub, or small tree; branches erect; twigs, leaves below, petioles and inflorescence densely clothed with a thick white tomentum. Leaves alternate, narrow-obovate, or oblong-obtuse, quite entire, 2–3 in. long, very coriaceous, margins recurved. Inflorescence terminal, usually a peduncled, simple umbel, sometimes reduced to a fascicle, or a single flower; bracts broadly ovate, ciliate, imbricate. Flowers nearly $\frac{1}{2}$ in. long. Sepals linear-oblong, with white tomentum. Petals narrow, deep purple. Capsule very variable in size, nearly globose, 2–4-lobed and valved, downy.—*Handbook of New Zealand Flora, p. 20.*

DESCRIPTION, etc.—Fig. 2, Plate No. 8.—The "KARO."—This species is common on the coast line throughout the Northern Island, and attains a height of from thirty to forty feet, with a trunk from one to two feet in diameter. The wood is white and compact, but worthless for all purposes where durability is required. It is used in turnery, and is difficult of combustion. The foliage is of a dark green, but the young leaves are lighter in colour, and covered at the back with a thick white cottony coat, which adds much to the beauty of the tree, and forms a varied and beautiful background to the very pretty umbelled crimson flowers, which mingle with it. This tree has been introduced successfully into many gardens, and affords a most interesting and excellent addition to the plantation around the homestead. In common with some of the other Pittosporads, it is known to the settlers as one of the "Turpentine" trees; which are probably so called on account of the gluten, in which the seeds in the capsule are immersed, emitting a peculiar odour, when expressed. The bark of this species is black.



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TARATA.—Pittosporum Eugenioides.

9. PITTOSPORUM UMBELLATUM (*Banks & Sol.*) The Umbelled Pittosporum.

SPECIFIC CHARACTER.—A small tree, 20–30 ft high, everywhere glabrous, except the under sides and petioles of the young leaves, peduncles, and calyces, which are covered with silky fulvous hairs; branches whorled. Leaves alternate, coriaceous, bright green, 2–3 in. long, obovate, or lanceolate-oblong, obtuse or acute, quite entire, narrowed into petioles ½–½ in. long. Flowers numerous, rather large, nearly ½ in. long in terminal umbels, or corymbs. Peduncles slender, 1 in. long, sometimes only ½ an inch. Sepals ovate-lanceolate. Petals linear-oblong, obtuse. Ovary pubescent. Capsule rounded 4-lobed, size of a hazel nut, 2-valved, valves woody, granulated on the surface.—*Handbook of New Zealand Flora, p. 21.*

DESCRIPTION, etc.—This beautiful species is indigenous to the Northern Island only, and is common about the Bay of Islands and neighbourhood. To the natives living in that locality it is known as the "Karo." Like other members of its genus, it is an evergreen, and is worthy of a place in our gardens and hedgerows. It attains, generally, a height of from 20–30 feet, and is very ornamental.

10. PITTOSPORUM EUGENIOIDES (*A. Cunn.*) The Eugenia-like Pittosporum.

SPECIFIC CHARACTER.—A small branching tree, 20–30 ft. high, everywhere quite glabrous, except the inflorescence, and at times the youngest leaves, which may have a few scattered silky hairs; branches often whorled. Leaves 2–4 in. long, usually elliptical, acute, narrowed into long petioles, rarely broader and obovate, quite entire, undulated or crisped, rather coriaceous with numerous fine veins. Flowers ¼–⅓ in. diameter, fragrant, diœcious (more or less), males with large anthers and longer filaments, collected in branched, many-flowered corymbs, with diverging, slender peduncles and pedicels; bracteoles setaceous. Sepals very variable, ovate, acuminate, glabrous. Petals narrow and spreading, recurved. Capsules numerous, small, ¼ in. long, ovoid, acute, glabrous, 2–3-valved.—*Handbook of New Zealand Flora, p. 21.*

DESCRIPTION, etc.—Plate No. 9.—The "TARATA."—This elegant tree is found on the East coast of both Islands, as far south as Otago. It attains a height of from twenty to thirty feet, and has a stem from twelve to eighteen inches in diameter. It is known to the settlers in some parts as "Lemon Wood." In growth it is very compact, and has a rich, dark-green foliage. When in bloom in November and December, displaying its profuse masses of pale golden flowers, it is very pretty. The flowers possess a sweet and deliciously-honied fragrance, which imparts an agreeable perfume to the surrounding atmosphere. From an artistic point of view, the happy combination of light and shade is exceedingly striking. This tree has a great attraction for bees, who reap an abundant harvest from the large quantity of honey secreted in its flowers; To these visits, the plant being (more or less) diœcious, or some bearing both male and female flowers on the same tree, the fertilisation of the seed is due. The wood is white and compact, but very difficult of combustion, and worthless for all purposes where durability is desired. It is adapted for turnery purposes, and light furniture use. Our plate represents the male flowers, the anthers of which are larger, and the filaments longer, than those of the female. Of the several species the "Tarata" (*P. eugenioides*), and the "Karo" (*P. crassifolium*), are, perhaps, the most showy plants. The subject of our notice is well worthy of horticultural care; and in our shrubberies, or home paddocks, would form an ornate and beautiful tree. The foliage is eagerly eaten by cattle, and it is in no way pernicious.

11. PITTOSPORUM CORNIFOLIUM (*A. Cunn.*) The Cornel-leaved Pittosporum.

SPECIFIC CHARACTER.—A small slender shrub, 2–4 ft. high, with forked or whorled branches, everywhere glabrous, except the young shoots and inflorescence, which present a few long silky hairs. Leaves 1–2 in. long, whorled, obovate, or elliptic-lanceolate, shortly petioled, quite entire and glabrous, coriaceous. Flowers polygamous, on very slender terminal 1–2 flowered peduncles, dingy red, $\frac{1}{3}$ in. long. Peduncles pilose, of the males $\frac{1}{2}$–1 in; female $\frac{1}{4}$–$\frac{1}{2}$ in. long. Sepals very narrow, subulate. Petals as narrow with slender tips. Capsule $\frac{1}{2}$ in. long, broadly obovate, or obcordate, compressed; valves yellow inside, coriaceous. Seeds large.—*Handbook of New Zealand Flora, p. 21.*

DESCRIPTION, etc., Plate No. 10.—The "PIRIPIRI."—This remarkable and interesting plant is peculiar to the eastern and southern coasts of the Northern Island, where it is common; always, or nearly so, growing epiphytically on trunks of forest trees. It is not at all unusual to find this plant growing out of the centre of a clump of *Astelia;* which again, in its turn, clings to the stalwart trunk of a lofty "Pukatea," (*Atherosperma Novæ Zelandiæ*), or other forest denizen. The flowers are rather insignificant, of a dingy crimson colour; but possess a fragrance. The capsule, or seed pod, is very singular in structure. The seeds are blackish purple, and lie embedded in a thick yellow gluten within the capsule, which, when open, forms two valves, or flaps, of a bright orange colour, producing a very showy effect. As soon as the gluten dries the the seeds become detached, and fall. Our plate pourtrays accurately the various stages of the seed receptacles during the ripening process, which reaches completion in the month of July.

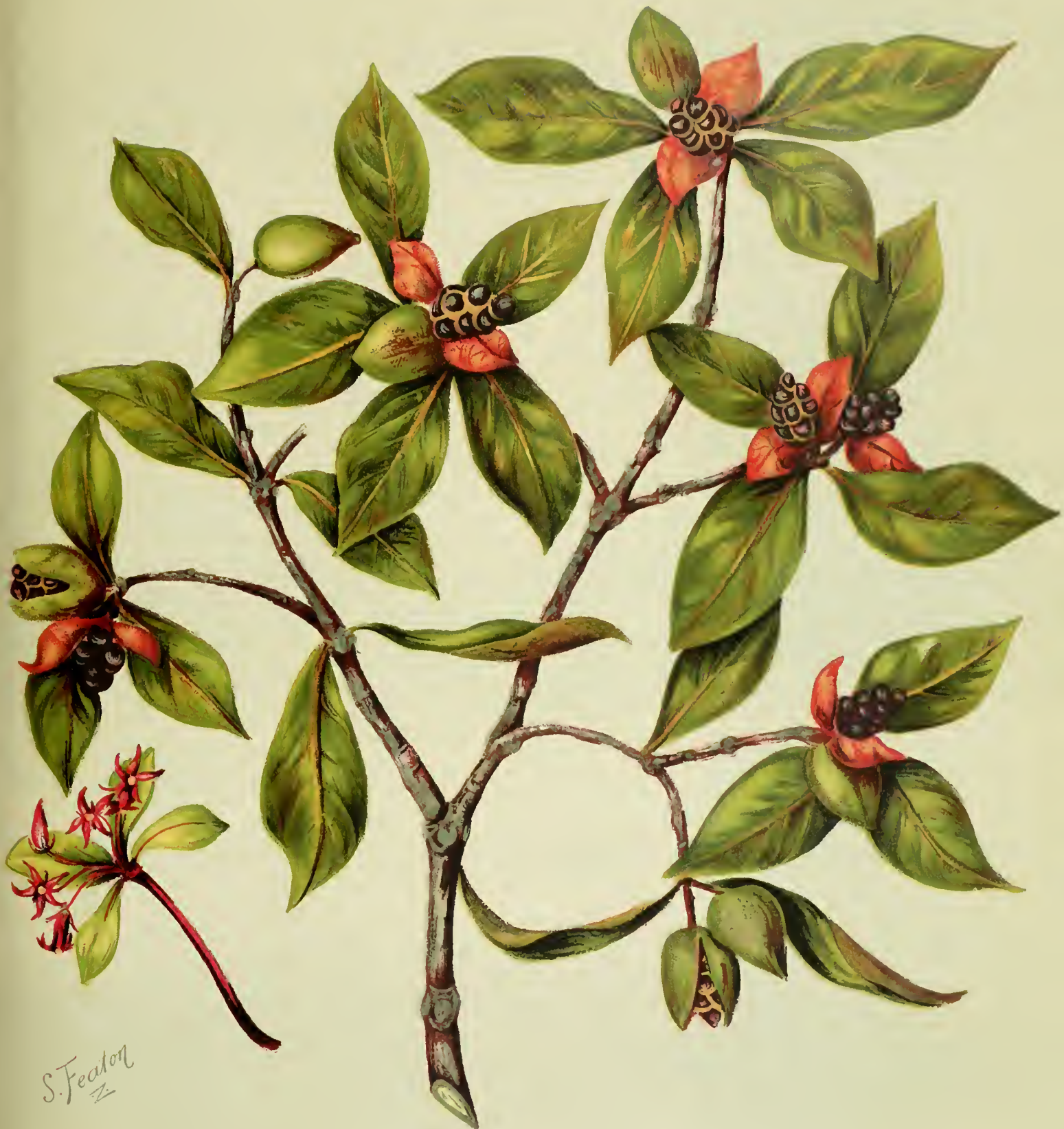
OTHER SPECIES OF PITTOSPORUM.

12. P. PIMELEOIDES (*R. Cunn.*)

A very slender, branched shrub, 3–5 ft. high. Leaves spreading, whorled, 1 in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. wide, rather membranous. Flowers small, terminal, solitary or few; peduncles, 1-flowered, very slender, $\frac{1}{4}$–1 in. long. Petals very slender, yellow-red. Capsule small, quite like that of *P. reflexum.* This shrub is indigenous to the Northern Island, and is found on dry hills at the Bay of Islands.

13. P. BUCHANANI (*Hook., F.*)

A rambling, branched shrub; 10–12 ft. high; young shoots and leaves silky-pubescent. Leaves scattered, 2–5 in. long, flat, quite entire, glabrous; shining green above, paler below. Sepals long, obtuse. Petals linear, dark purple. Found near Mount Tongariro, and is in cultivation in Wellington (*Buchanan*).



BOCK & COUSINS, CHROMO-LITHO

PIRIPIRI.—Pittosporum cornifolium.

Chapter VI.

Order VI.—CARYOPHYLLEÆ. The Carnation and Chickweed Family.

Character of the Order.—Herbs with opposite, quite entire or minutely serrulate leaves. Flowers hermaphrodite. Sepals 4 or 5, free or connate, imbricate. Petals 4 or 5, or 0, hypogynous or perigynous. Stamens, 4, 5, 8, or 10 inserted with the petals, sometimes seated on, or between the lobes of an annular disk. Ovary 1-celled, bearing many (rarely few) ovules on a free central or basal placenta. Styles 2–5, free or connate, stigmatose at the apex or inner face. Capsule many-seeded, splitting into as many, or twice as many, valves as styles. Seeds with farinaceous albumen, and a usually curved terete embryo.—*Handbook of New Zealand Flora, p. 22.*

Description of the Order.—

A VERY large order, abounding in temperate and cold climates. A few foreign members of it are shrubby in habit. The plants of this order inhabit mountains, hedges, rocks, and waste places. Humboldt says that the Cloveworts (the Chickweed Family) constitute $\frac{1}{22}$ of the flowering plants of France, $\frac{1}{27}$ of those of Germany, $\frac{1}{17}$ of those of Lapland and $\frac{1}{72}$ of those of North America. The order has no very marked properties. Some say that the principle called *saponine*, which is found in some of the plants, has poisonous qualities. There are three sub-orders:—(1.) Sileneæ, the Pink tribe, with united sepals opposite the stamens, when the latter are of the same number; (2.) Alsineæ, the Chickweed tribe, with separate sepals, bearing the same relation to the stamens as in Sileneæ; (3.) Molluagineæ, the Carpetweed tribe, in which the petals are wanting, and the stamens are alternate with the sepals when of the same number. There are some showy flowers in the order, such as Pinks and Carnations; but the greater number are mere weeds. The Clove Pink, *Dianthus caryophyllus*, is the origin of all the cultivated varieties of Carnations known as Picotees, Bizarres and Flakes.

The common Chickweed, (*Stellaria media*) and Spurrey, (*Spergula arvensis*), used as fodder for sheep, are other examples. There are about sixty genera, and one thousand one hundred species. The plants of this order are usually insipid. In New Zealand the order is represented by:—Tribe 1, SILENEÆ, sepals connate into a tubular calyx; Genus 1, *Gypsophila*. Tribe 2, ALSINEÆ, sepals free; Genus 2, *Stellaria*; 3, *Colobanthus*; 4, *Spergularia*. There are several Caryophylleous weeds introduced into New Zealand, especially from Europe; the principal of which are *Polycarpon tetraphyllum*, a small tufted annual, with minute green flowers; *Cerastium*, a genus of very common, erect or straggling, hairy weeds, with white flowers; and *Spergula arvensis*, an annual bearing whorls of linear leaves, and cymes of white flowers.

GENUS I.

GYPSOPHILA (*Linn.*) The Gypsophila.

GENERIC CHARACTER.—Annual (or perennial) herbs, with small paniculate flowers. Calyx more or less campanulate, 5-fid, usually 5-nerved. Petals 5, with a narrow claw, and entire or emarginate blade. Stamens 10, at the base of a small torus. Ovary, many-ovuled. Styles 2. Capsules ovoid or globose, 4–5-valved. Seeds laterally attached.—*Handbook of New Zealand Flora, p. 22.*

DESCRIPTION, etc.—A large South European genus of annual or perennial evergreen herbaceous plants, belonging to the *Alsineous* division of the order. The species, which are numerous, have leaves like those of the Pink; and small white or pink flowers, which are usually disposed in diffused panicles. They inhabit various parts of Europe and Asia, growing mostly in rocky or stony places, especially in a limestone soil. Some of them are occasionally cultivated as border plants, and on rockeries. It is represented in the Southern Hemisphere by only one species; and this is indigenous to New Zealand. The name of this genus is due to its plants delighting to grow in a soil composed largely of gypsum.

1. GYPSOPHILA TUBULOSA (*Boiss.*) The Tubular Gypsophila.

SPECIFIC CHARACTER.—A small, much dichotomously-branched, glandular-pubescent annual, 4–5 in. high; stems slender, terete, erect. Leaves subulate, hardly acute, rigid. Peduncles slender, axillary; 1-flowered, ½-⅔ in. long, diverging in fruit. Flowers, small ⅛ in. long. Calyx, tubular-campanulate, with 5 green ribs, 5-toothed. Petals narrow, linear, retuse or bifid, longer than the calyx. Capsule, 5-valved at the tip, exserted. Seeds transversely rugose, with deep impressions.—*Handbook of New Zealand Flora, p. 22.*

DESCRIPTION, etc.—This herb is common to both Islands, in many places, and is found growing from sea level up to a height of 4,000 feet. It is not uncommon in South Australia. It is believed to be an importation; was originally described from Asia Minor, and is found nowhere but in that country, Australia, and New Zealand. Later observations are tending to prove, owing to the rapid increase of the plants in various parts of New Zealand, that it is an introduction.

GENUS II.

STELLARIA (*Linn.*) The Star-worts.

GENERIC CHARACTER.—Erect, or decumbent herbs, annual (or perennial) with flat or acerose leaves, and axillary or fascicled white flowers. Sepals 5, spreading. Petals 5, bifid or 0. Stamens 10 or fewer, hypogynous, or seated on an annular disk. Styles 3; ovules few or many. Capsule globose oblong, or ovoid, splitting into 3 bifid or 6 valves. Seeds often muricate.—*Handbook of New Zealand Flora, p. 22.*

DESCRIPTION, etc.—A very large genus in the temperate and cold regions of both hemispheres generally. Several species are indigenous to Great Britain. *Stellaria holostea*, the "Greater Stichwort,"—called also "Satin Flower" and "Adder's Meat,"—is one of the early British hedge flowers, with long, straggling, quadrangular, stems; narrow, grass-like leaves, and large, panicled, lustrous white flowers, with deeply-cloven petals. *Stellaria media* the Common Chickweed, is sufficiently marked, by a line of hairs on one side of the stem, changing to the opposite side, whenever it reaches a pair of leaves. The genus is represented in New Zealand by the following:—(1.) S. PARVIFLORA, a creeping herb; (2.) S. ELATINOIDES, a minute, creeping or ascending herb; (3.) S. DECIPIENS, a decumbent herb; (4.) S. ROUGHII, an erect herb; (5.) S. GRACILENTA, an erect, rigid herb.

1. STELLARIA PARVIFLORA (*Banks & Sol.*) The Small-flowered Stellaria.

SPECIFIC CHARACTER.—A very slender pale-green flaccid herb with prostrate, wiry, creeping stems and branches, a span long, and upwards, wholly glabrous, except a few hairs on the petioles. Leaves $\frac{1}{4}$–$\frac{1}{2}$ in. long, nearly orbicular, acute, rarely cordate at the base, longer than the petioles. Peduncles axillary, shorter than the leaves, 1–2 flowered, 2 bracteolate about the middle. Flowers minute, $\frac{1}{12}$ in. diameter. Sepals 5. Petals 0 or 5, shorter than the petals. Stamens 5 or 10. Capsule as long or longer than the sepals, 6-valved to the middle. Seeds about 8, pale brown, deeply pitted and reticulated.—*Handbook of New Zealand Flora, p. 23.*

DESCRIPTION, etc.—This species is common to both the Northern and Middle Islands; it is not uncommon in woods, and was originally found by the botanists Banks and Solander, on their first visit to New Zealand. In the Nelson district, it ascends the mountains to a height of 5,000 feet. It is allied to the Tasmanian *S. flaccida*.

OTHER SPECIES OF STELLARIA.

2. S. ELATINOIDES (*Hook., F.*)

A very small, glabrous, tufted, pale-green herb. Stems, $\frac{1}{2}$–1 in. long, erect or creeping, very slender or rather stout. Leaves $\frac{1}{12}$–$\frac{1}{5}$ in. long, and flowers $\frac{1}{10}$ in. diam. It is indigenous to the Northern Island only, and has been found on grassy banks of the East Coast, Hawke Bay, and a part of the Lake District.

3. S. DECIPIENS (*Hook., F.*)

A glabrous, laxly-tufted, weak, decumbent, pale-green, branching herb. Leaves, $\frac{1}{4}$–$\frac{1}{2}$ in. long, ovate or obovate, acuminate, narrowed into a broad, somewhat ciliate petiole. Peduncles, axillary, 1–3-flowered, 2 bracteolate in the middle, shorter or longer than the leaves. It is found in the islands forming the Lord Auckland Group, and in Campbell Island. It is closely allied to the *S. media* of Europe, which is naturalized abundantly in some parts of New Zealand, but differing in the axillary, 1-flowered peduncles, and absence of a pubescent line on the branches. Also allied to the Tasmanian *S. flaccida*, but the flowers are much smaller.

4. S. ROUGHII (*Hook., F.*) Captain Rough's Stellaria.

Fig. 5, Plate No. 6.—A short, much-branched succulent, erect or straggling, green Alpine herb, 2–4 in. high. Leaves, $\frac{1}{2}$–$\frac{2}{3}$ in. long, fleshy, linear, acuminate, 1-nerved. Flowers large, $\frac{1}{2}$ – $\frac{3}{4}$ in. diam., terminal, solitary, on short stout peduncles. It is a very singular species, and easily recognised by its large green flowers, quite unlike any other in habit. It is indigenous to the Middle Island, being found on the mountains, in shingle beds, at an altitude of from 4,000 to 6,000 feet. Named by Sir J. D. Hooker, in honour of Captain Rough, one of our early and diligent botanists.

5. S. GRACILENTA (*Hook., F.*) The Slender Stellaria.

Fig. 6, Plate No. 6.—A wiry, rigid, loosely-tufted mountain species, with scabrid stems 2–4 in. high, and very long peduncles. Leaves, $\frac{1}{4}$ in. long, glabrous, shining; the margins revolute to the midrib, leaving a deep furrow between them. Peduncles axillary in the upper leaves, solitary, 1-flowered, 1–4 in. long. Flower $\frac{1}{3}$ in. diameter. Sepals linear, oblong, obtuse, with white, very broad, scarious margins. Petals, 5. Seeds, 8–10, yellow-brown. Found on the mountains of the Middle Island up to an altitude of 4,500 feet. It is a very peculiar species, and is at once recognized by its rigid, wiry habit, narrow leaves, and very long, erect, slender peduncles.

GENUS III.

COLOBANTHUS. (*Bartl.*) The Colobanthus.

GENERIC CHARACTER.—Usually densely tufted, rigid green herbs, with subulate, opposite leaves, and solitary green flowers on short or long terminal scapes or peduncles. Sepals 4 or 5, coriaceous, erect. Petals 0. Stamens 4 or 5, perigynous, alternate with the sepals. Styles, 4 or 5, opposite the sepals. Capsule ovoid, many-seeded.—*Handbook of New Zealand Flora, p. 24.*

DESCRIPTION, etc.—A remarkable genus of little rigid, tufted herbs, glabrous, and often fleshy, with narrow (or short) and imbricate leaves, and solitary green flowers.

It is a southern genus; found only in Australia, New Zealand, the Andes of South America, and the Antarctic regions. It consists of ten species, five of which are indigenous to New Zealand. Most of them are found in hilly, or alpine districts, and some have a remarkably moss-like appearance.

1. COLOBANTHUS QUITENSIS (*Bartl.*) The Quito Colobanthus.

SPECIFIC CHARACTER.—A small, glabrous, perennial, much-branched, tufted green herb, 1–2 in. high. Leaves chiefly radical $\frac{1}{4}$–$\frac{3}{4}$ in. long, subulate, acute, but not acicular (or rarely so) at the tips, concave above, convex on the back, quite entire. Scapes longer or shorter than the leaves, usually very short. Flowers 4-merous, $\frac{1}{8}$ in. long. Sepals ovate, blunt, rarely acicular at the tip. *Handbook of New Zealand Flora, p. 24.*

DESCRIPTION, etc.—This herb is found on the mountains of Nelson, and in the clefts of rocks on the Kowai River, at an altitude of 1,500 feet. Except in the rather smaller leaves, Dr. Hooker says that he can find no distinction between this and the South American variety, which is found along the Andes from Mexico to Cape Horn, and also in Amsterdam Island in the South Indian Ocean.

OTHER SPECIES OF COLOBANTHUS.

2. C. BILLARDIERI (*Fenzl.*)

A small, quite glabrous, often tufted, alpine herb, with small leaves like *C. quitensis*, but with acicular tips. Peduncles often 2 in. long. Flowers $\frac{1}{8}$–$\frac{1}{4}$ in. long, green, usually 5-merous. It is common throughout the Islands in alpine and hilly districts, and is abundant in Victoria and Tasmania.

3. C. SUBULATUS (*Hook., F.*)

A small, moss-like, densely-cæspitose, perfectly glabrous, plant, with subulate, rigid, shining leaves, forming tufts about 1 in. high. Flowers hidden amongst the leaves. Sepals, 4 or 5. It is indigenous to the Middle Island, in the Lake District, Sinclair Range and the Awatere Valley. It is likewise found in the Alps of Victoria, and abundantly in Antarctic America.

4. C. ACICULARIS (*Hook., F.*) The Needle-pointed Leaved Colobanthus.

Fig. 7, Plate No. 6.—A small, moss-like, densely-cæspitose, shining, rigid, glabrous, alpine plant, forming tufts 1–2 in. high. Flowers sessile, shorter than the leaves. Sepals, 5. Found in dry, rocky places—Wairau Gorge and Otago Lake District; abundant.

5 .C. MUSCOIDES (*Hook., F.*)

A perfectly glabrous, moss-like, densely-tufted, bright-green plant; soft, and rather flaccid in texture, forming large patches. Flowers minute, sunk amongst the leaves. Found in the Lord Auckland Group, and Campbell Island, on rocks near the sea.

GENUS IV.

SPERGULARIA. (*Pers.*) The Sand Spurrey.

GENERIC CHARACTER. — Spreading dichotomously-branched, perennial herbs, with linear leaves, scarious stipules, and white or rose-coloured peduncled flowers. Sepals 5, spreading. Petals 5, obtuse, or 0. Stamens 5 or 10, hypogynous. Ovary subglobose. Styles 3. Capsule 3-valved. Seeds compressed, often winged.—*Handbook of New Zealand Flora, p. 25.*

DESCRIPTION, etc.—This is a small Britis h genus, of which species are scattere over many temperate and warm parts of the globe, especially near the sea, and in waste places. The genus consists of small weedy herbs, with opposite or fasciculate-whorled, setaceous, or more or less cylindrical, fleshy leaves, and lilac or pink flowers.

1. SPERGULARIA RUBRA (*Pers.*) var. *Marina.* The Pink-flowered Spergularia.

SPECIFIC CHARACTER.—A rather succulent, excessively-branched, prostrate or sub-erect annual herb, with perennial root, more or less pubescent, with viscid down. Stems and branches terete, 1 in. to a span long. Leaves linear, $\frac{1}{3}$–1 in. long, quite entire. Flowers numerous, axillary and terminal, on long slender peduncles, $\frac{1}{2}$–1 in. long, which are often patent, or reflexed. Flowers very variable in size, $\frac{1}{4}$–$\frac{1}{3}$ in. long. Sepals green, with a white membranous border. Petals shorter than the sepals, sessile, often very pale. Stamens 5. Seeds with a broad membranous wing.—*Handbook of New Zealand Flora, p. 26.*

DESCRIPTION, etc., Fig. 8, Plate No. 6.—This herb is common on the sea shore in places throughout the Islands. It is also found under various forms in all temperate and many tropical localities. The field weed, *Spergula arvensis*, or Corn Spurrey, which is closely allied to this herb, is very common in Britain. According to Don, the botanist, this plant is grown on the Continent of Europe to serve as pasture for cattle, as it imparts a fine flavour to mutton, and enriches the milk of cows. Another ally, *S. pilifera*, has, of late years, been grown in English gardens as a substitute for grass on lawns. Its foliage is of a pleasant green colour, and delicate texture; it soon establishes itself, and possesses the recommendation of retaining its verdure in the dryest and hottest seasons. The latter advantage it owes to the fact that it belongs to a class of plants which evaporate their moisture slowly, whilst its long fibrous roots descend to a sufficient depth to be little affected by drought. The New Zealand species, *S. rubra*, is a very handsome little plant, with large pink or white flowers, and linear leaves. It delights in the sandy shores and waste places of the coast line throughout both Islands.

Chapter VII.

Order VII.—PORTULACEÆ. The Purslane Family.

Character of the Order.—Herbs, usually glabrous, often succulent, with opposite (rarely alternate) exstipulate (rarely stipulate) leaves, and hermaphrodite flowers. Sepals 2 or 3 imbricate. Petals 4 or 5, free or connate to the base, hypogynous, imbricated. Stamens 5 or fewer, often adnate to the base of the petals. Ovary 1-celled. Style more or less deeply 2–3-fid, the arms stigmatose on the inner face. Ovules several or many, in the base of the cell. Capsule membranous, with as many valves as styles, and one or many seeds. Seeds with a crustaceous testa, farinaceous albumen, and terete curved embryo.—*Handbook of New Zealand Flora, p. 26.*

Description of the Order.—

FOUND in various parts of the World; chiefly, however, in South America, and at the Cape of Good Hope. The plants always inhabit dry places, and have a great affinity to *Caryophylleæ*. The New Zealand genera are:—(1), Claytonia, leaves opposite or in pairs; stamens 5; (2), Montia, leaves opposite, stamens 3–5 opposite the petals; (3), Hectorella, leaves densely imbricate, stamens 5, alternate with the petals. The name of the Order signifies "to carry milk," from some of the plants in it having milky juice.

Genus I.

CLAYTONIA (*Linn.*) The Claytonia.

Generic Character.—Herbs with opposite alternate, or fasciculate leaves, and racemose or solitary flowers. Sepals 2, herbaceous. Petals 5, united at the very base, or free. Stamens 5, adnate to, and opposite to the petals. Ovary many-ovuled. Capsule 3-valved, 3 or more seeded. *Handbook of New Zealand Flora p.* 27.

Description, etc.—A large North American genus, of which the only representative found in the Eastern Hemisphere, is *C. australasica*, described below. The genus

was named in honour of Dr. John Clayton, a botanist of repute, who collected the plants for the "Flora Virginica" of Gronovius. Several species have been introduced into British gardens from North America, and are plants of very elegant growth.

1. CLAYTONIA AUSTRALASICA (*Hook., F.*) The Australian Claytonia.

SPECIFIC CHARACTER.—A glabrous, slender, creeping, rather succulent tender herb, extremely variable in size. Leaves solitary or in distant pairs, narrow-linear, or linear-spathulate, $\frac{1}{3}$–2 in. long, quite entire, pale green, obtuse, nerveless, the petioles dilating into membranous stipules at the base. Scapes axillary, solitary, 1-flowered, erect, usually shorter than the leaves. Flowers pure white, very variable in size, $\frac{1}{4}$–$\frac{2}{3}$ in. diameter. *Handbook of New Zealand Flora, p. 27.*

DESCRIPTION, etc., Fig. 9, Plate No. 6.—This beautiful little slender herb is indigenous to the Middle Island; it is found in boggy places, and ascends the Southern Alps to a height of 5,000 feet. In proportion to the size of the plant, the flowers may be considered large and handsome. Of the order, this genus is the only one which contains ornamental perennial plants. Many of these are in cultivation in Britain, having been introduced from North America in the year 1768.

GENUS II.

MONTIA (*Linn.*) The Montia.

GENERIC CHARACTER.—A small annual, branched or simple, usually tufted, glabrous herb, with opposite rather fleshy, spathulate leaves, and small white, axillary, peduncled flowers. Sepals 2, (rarely 3.) Petals 5, connate at the base. Stamens usually 3 or 5, opposite the petals, and adnate to them. Ovary and capsule as in *Claytonia*, but only 1–3 seeded.—*Handbook of New Zealand Flora, p. 27.*

DESCRIPTION, etc.—A British genus found in many parts of the North and South temperate zone. *M. fontana*, or "Water Chickweed," is a common minute aquatic, growing on the banks of streams, and has, like many other aquatic plants, a wide geographical range.

1. MONTIA FONTANA (*Linn.*) The Water Chickweed, or Water Blink.

SPECIFIC CHARACTER.—A glabrous, slender, branching, weak, bright green marsh or water plant, very variable in size. Stems 1–12 in. high. Leaves $\frac{1}{4}$ 1 in. long, from elliptical-ovate to linear-lanceolate, sub-acute, quite entire. Flowers about $\frac{1}{8}$ in. broad.—*Handbook of New Zealand Flora, p. 27.*

DESCRIPTION, etc.—This minute aquatic is common in watery places throughout the alpine parts of the Northern and the Middle Islands, and in Campbell Island; it is also found in Tasmania, Kerguelen Land, and throughout temperate North and South America, and Europe.

GENUS III.

HECTORELLA (*Hook. F.*) The Hectorella.

GENERIC CHARACTER.—A small densely tufted, glabrous, moss-like plant. Leaves most densely imbricated all round the stem, coriaceous, entire. Flowers almost sessile, amongst the uppermost leaves, white. Sepals 2, short, concave, truncate, continuous with the very short, broad, flat pedicel. Petals 5, united at the very base, erect, veined, obtuse, thickened below the tip. Stamens 5, inserted on the tube of the coralla, alternate with the petals; filaments as long as the petals; anthers linear-oblong, 2-celled. Ovary ovoid, membranous, veined, narrowed into an erect style; stigmas 1–3, linear, thickened, papillose internally. Ovules 4–5, erect from the base of the cell, amphitropous, funicle, slender. Fruit unknown.—*Handbook of New Zealand Flora, p. 27.*

DESCRIPTION, etc.—A remarkable genus, allied to no other, but approaching in habit to *Lyallia* of Kerguelen Land. The genus is named in compliment to Sir James Hector, F.G.S., during whose adventurous expedition to the Otago Alps it was discovered.

1. HECTORELLA CŒSPITOSA (*Hook., F.*) The Tufted Hectorella.

SPECIFIC CHARACTER.—Stems 1–1½ in. high, most densely tufted, and with the leaves on them nearly as thick as the finger. Leaves excessively numerous and closely imbricate, spreading, broadly triangular-ovate, $\frac{1}{6}$ in long, much dilated and membranous below the middle, coriaceous above, with thickened margins and keel, veins reticulated. Flowers several, from amongst the leaves at the tips of the stems, nearly $\frac{1}{4}$ in. long, white.—*Handbook of New Zealand Flora, p. 27.*

DESCRIPTION, etc., Fig. 10, Plate No. 6.—This beautiful and curious alpine is found abundantly on Mount Alta, in the Middle Island, where it may be seen in patches on steep, rocky places at an altitude of 5,000 feet. It was first discovered by Sir James Hector, F.G.S., in 1862, during his visit to the Otago Alps, in pursuit of alpine plants, and in the cause of science generally. A marked feature in this truly beautiful plant is the arrangement of the flowers, which are pure white, in circles at the ends of the branches; many of these class of plants, which are known as "Patch Plants," having only one terminal flower on each branch. The artist, in depicting this alpine gem, has happily given life to the subject, and clearly shews this distinctive feature.

Chapter VIII.

Order VIII.—ELATINEÆ. The Water Peppers, or Water-worts.

Character of the Order.—Small water plants, rarely shrubs, mostly prostrate, with usually opposite stipulate leaves. Flowers small or minute, hemaphrodite, regular. Sepals 2–5, free, imbricate. Petals 2–5, free, hypogynous, imbricate. Disk 0. Stamens as many as the petals, or twice as many, hypogynous, free. Ovary free, 2–5 celled ; Styles 2–5, stigmas capitate ; Ovules numerous in the angles of the cells. Capsule septicidal, the valves falling away and leaving the seeds attached to a central column. Seeds straight or curved, with terete embryo and no albumen.—*Handbook of New Zealand Flora, p.* 28.

Description of the Order.—

DISTRIBUTED generally over the world, though a small order. Some of the plants possess acridity, hence their English name of "Water Peppers." There are six known genera and twenty-four species. New Zealand is represented by only one genus, that of *Elatine.*

GENUS I.

ELATINE (*Linn.*) The Water-worts.

Generic Character.—Aquatic, ereeping, glabrous, small herbs, with pellucid dotted leaves, and minute, axillary, solitary flowers. Sepals membranous, obtuse ; Ovary globose. Capsule membranous, the septa either disappearing, or persistent on the axis. Seeds oblong or cylindrical, longitudinally striated and transversely wrinkled.—*Handbook of New Zealand Flora, p.* 28.

Description, etc.—A genus of dwarf annual aquatics, with rooting pipe-like stems, and opposite leaves. There are two British species, called Water-worts, both of unusual occurence. *E. hexandra* is a minute plant scarcely an inch high, which grows on the margins of lakes, where it forms a moss-like mat, sometimes extending under the water, and in dry seasons, when it is left by the receding water, assuming a crimson hue. The

flowers, which are minute and flesh-coloured, grow in the axils of the opposite leaves. *E. hydropiper*, the Water Pepper, scarcely differs from the preceding, except that the flowers are octandrous. They might be sown with advantage on the shelving banks of artificial water, to conceal the unsightliness of mud.

1. ELATINE AMERICANA (*Arnott.*) The American Water-wort.

SPECIFIC CHARACTER.—A minute, glabrous, prostrate, matted aquatic. Stem rather succulent, creeping, sometimes elongated, and 1–8 in. long. Leaves small, $\frac{1}{8}$–$\frac{1}{2}$ in. long, obovate-oblong, obtuse, quite entire, shortly petioled. Flowers minute, sessile, 3-merous. Calyx persistent. Capsule with the septa disappearing. Seeds slightly curved.—*Handbook of New Zealand Flora, p. 28.*

DESCRIPTION, etc.—This minute aquatic is probably common in bogs in the Northern Island. It is also found in Tasmania, Australia, the Fijis, and North and South America. Equally with the European species, it would be found of use in clothing the margins of artificial water to hide unsightly approaches.

Chapter IX.

Order IX.—HYPERICINEÆ. St John's Worts.

Character of the Order.—Herbs, shrubs or trees, with opposite, simple, quite entire or glandular-toothed, often pellucid-dotted exstipulate leaves. Flowers regular, hermaphodite. Sepals 5, imbricate. Petals 5, hypogynous, imbricate. Disk 0. Stamens indefinite, hypogynous, free or polyadelphous, filaments filiform. Ovary 3–5 celled, or 1-celled with inflexed margins to the carpels. Styles as many as carpels, filiform, free or connate, stigmas terminal; Ovules numerous, in 2 series in the axis of the cells, or on the inflexed edges of the carpels. Fruit usually capsular. Seeds exalbuminous. *Handbook of New Zealand Flora, p.* 28.

Description of the Order.—

EXTENSIVELY distributed throughout the world. There are nineteen genera, and nearly three hundred species in the order. Some of the plants are purgative, others tonic and astringent, and some species yield a gum resin similar to gamboge. The name *Hypericum* is as old as the time of Dioscorides, but its origin and meaning are uncertain. Some derive it from the Greek word *huper*, under, and *eikon*, an image; and suppose it to signify that the upper part of the flower represents a figure. Others state that *hyper* signifies through, and that the name alludes to the pellucid dots in the leaves, which form small lenses, through which, when held to the light, images may be seen. The French name of the plant, *Millepertuis*, "a thousand pores," is evidently derived from the same source. The English name, "St. John's Wort," is taken from the country people formerly being in the habit of gathering this plant on St. John's Day, to use it to protect themselves from the influence and attacks of evil spirits.

GENUS I.

HYPERICUM (*Linn.*) The St. John's Herb.

GENERIC CHARACTER.—Sepals and petals 5. Stamens very numerous, all free, or connected into bundles. Ovary 1 or 3–5 celled. Capsule septicidal. Seeds not winged, with a straight embryo.—*Handbook of New Zealand Flora, p.* 28.

DESCRIPTION, etc.—An extensive genus of herbaceous, or shrubby plants giving the name to the order. The best known example is *H. calycinum*, a somewhat shrubby European plant one to two feet high, with large almost evergreen leaves, curiously sprinkled with pellucid dots. The flowers are very large, terminal and solitary. *H. androsæmum*, (by some authors made a distinct genus on account of its berry like capsules) is, in the West of England, a common hedge, or woodland plant, growing to the height of one and a-half feet. The New Zealand species are: H. GRAMINEUM, an erect herb with subcordate leaves; and H. JAPONICUM, a much smaller plant, procumbent, with oblong or obovate leaves.

1. HYPERICUM GRAMINEUM (*Forst.*) The Grass or Field Hypericum.

SPECIFIC CHARACTER.—An erect or ascending, rather wiry, quite glabrous, perennial-rooted herb, branching from the root, with 4-angled branches 6–12 inches high, slender and sparingly leafy. Leaves small, ½–1 in. long, sessile, cordate, oblong, obtuse, quite entire, black dotted, margins usually revolute. Flowers subsolitary or in 3-chotomous terminal cymes, ¼–½ in. across, on rather stout, erect, rigid peduncles. Sepals oblong or ovate, obtuse or acute, black dotted, quite entire. Petals longer than the calyx, golden-yellow, curling inwards as they wither. Stamens nearly free. Capsule ovoid, acute, longer or shorter than the sepals.—*Handbook of New Zealand Flora, p.* 29.

DESCRIPTION, etc.—This species is common in grassy places throughout New Zealand, and is also frequent in temperate Australia, New Caledonia, and the hilly country of India. The leaves of some of the British species were formerly applied to fresh wounds, which they were supposed to heal; hence the plant was called in French *Toutesaine*—corrupted into Tutsan, its common English name. The pellucid dots, and black glands in all the species contain an essential oil.

2. HYPERICUM JAPONICUM (*Thunb.*) The Japan Hypericum.

SPECIFIC CHARACTER.—A much smaller plant than *H. gramineum*, with prostrate branches, broader, flat leaves, smaller, often sessile flowers, having broader, more obtuse sepals, and shorter, rounder capsules.—*Handbook of New Zealand Flora, p.* 29.

DESCRIPTION, etc.—Abundant in most grassy places throughout New Zealand. It is also found in many parts of temperate and sub-tropical Asia. A very similar and perhaps identical plant inhabits the West coasts of temperate North and South America. Intermediate forms, says Dr. Hooker, are found in New Zealand, Australia, and India, in all of which countries both occur; and he suspects that they are the extreme forms of one variable species.

Chapter X.

Order X.—MALVACEÆ. The Mallow Family.

Character of the Order.—Herbs, shrubs or trees, with (usually) tough fibrous inner bark, alternate stipulate, leaves, and stellate hairs. Flowers usually hermaphrodite, regular and large. Calyx, 5-lobed, lobes valvate. Petals 5, hypogynous, usually connate at the base, adnate to the staminal tube, imbricate. Disk 0, or a small torus. Stamens very numerous, their filaments united into a tube. Anthers often reniform, 1-celled. Ovary of 1 or more, free or connate, 1 or many-ovuled carpels, whorled round, and adnate with the torus. Styles as many as carpels, connate below, filiform above. Fruit of one or more indehiscent or 2-valved cocci, or capsular. Seeds, often hairy. Albumen, little or none. Cotyledons large, folded.—*Handbook of New Zealand Flora*, *p.* 29.

Description of the Order.—

THIS large order is abundant in the Tropics and temperate zones, to which the Mallow, Lavatera, Hollyhock, Cotton, and many other well-known cultivated New Zealand garden plants belong. There are nearly fifty genera in the order, and upwards of one thousand species; all of which are mucilaginous, demulcent, and fibre-yielding. *Althæa officinalis* (Marsh Mallow) yields mucilage; *Gossypium* furnishes various kinds of cotton. This genus is one of the most important in the whole vegetable kingdom; to it we are indebted for the valuable and well-known article, Cotton, which occupies such a prominent place in the manufacturing industry of nearly all civilised countries, and gives employment to so large a portion of the British mercantile marine. The Cotton of commerce consists of the hairs attached to the seeds of the plant; it is obtained more especially from *Gossypium herbaceum*, *G. barbadense*, *G. arboreum* and *G. peruvianum*. Cotton plants are cultivated in the United States of America, the East and West Indies, the Brazils, Egypt, and the South Sea Islands. The use of Cotton dates from pre-historic ages. It is frequently mentioned in ancient writings before the Christian era. Pliny

mentions that it grew in "Upper Egypt on the side of Arabia, where robes were made of Cotton for the Egyptian priests." It was brought into Spain by the Mahomedan conquerors of that country, and so spread through Europe. *Hibiscus cannabrinus* supplies Indian hemp, and *Paratium elatium* gives "Cuba bast." *Malva moschata*, the Musk Mallow, derives its name from the peculiar musky odour given off by all parts of the plant when kept in a confined situation, particularly in warm dry weather; but this odour is seldom powerful enough to be smelt in the open air. The plant is a perennial, and has large rose-coloured flowers; it is found along hedges, roadsides, and borders of fields in Britain. *M. rotundifolia* is an annual, with tough downy stems lying along the ground, roundish lobed leaves, and small pale-blue flowers; it is common in waste places in most parts of Europe, including Britain, and in Western Asia. In Egypt, especially upon the banks of the Nile, it is extensively cultivated, and used by the natives as a pot-herb. *M. sylvestris*, the common Mallow, or "*Mauve*" of the French, is employed medicinally on account of its highly mucilaginous properties, a decoction of it being used outwardly as an application to bruises, and internally in dysentery. It is in great repute amongst herb doctors, and rustic practitioners generally, particularly in France, where its dried flowers are largely used in the preparation of a drink called "*Tisane*," held to be a cure for headaches, feverish colds, and many other complaints; its leaves are also used for making poultices. It is a biennial, having erect, somewhat hairy stems, roundish long-stalked leaves, and reddish-purple flowers. The order receives its name from the mucilaginous properties of the plants contained in it. There are many very handsome species in cultivation in British gardens. The order is represented in New Zealand by the following genera:—(1.) PLAGIANTHUS, shrubs or small trees with very tough inner bark, and uni-sexual or bi-sexual flowers; (2.) HOHERIA, small trees with pellucid dotted foliage, and hermaphrodite flowers; (3.) HIBISCUS, erect herbs, with often lobed leaves, and hermaphrodite flowers.

GENUS I.

PLAGIANTHUS (*Forst.*) The Plagianthus.

GENERIC CHARACTER.—Shrubs or small trees, with very tough inner bark. Flowers uni- or bi-sexual. Bracts 0, or small, and distant from the calyx. Calyx 5-toothed or 5-fid. Staminal tube divided above into many short, or long filaments. Ovary of 1 free, or many more or less united, 1-ovuled carpels. Styles filiform or club-shaped, combined below, stigmatiferous towards the apex along the inner face. Fruit of 1 indehiscent or irregularly bursting carpel, or of many whorled round an axis. Seed pendulous.—*Handbook of New Zealand Flora, p.* 30.

DESCRIPTION, etc.—A small genus confined to Australia, Tasmania and New Zealand. One species is a tall tree, and the others are large shrubs, or small trees. *P. sidoides* is one of several plants with fibrous bark, which, in Tasmania and New South Wales,

bear the native name of "Kurrajong." The New Zealand species are:—P. DIVARICATUS, a much-branched shrub; P. BETULINUS, a lofty tree, or straggling bush; and P. LYALLII, a small tree.

1. PLAGIANTHUS DIVARICATUS (*Forst.*) The Branch-spreading Plagianthus.

SPECIFIC CHARACTER.—A rigid, glabrous, much-branched shrub, with slender, spreading, tough branches, small fascicled leaves, and minute white flowers, succeeded by small globose capsules. Leaves $\frac{1}{3}$–$\frac{3}{4}$ in. long, narrow linear, or subcuneate, obtuse, quite entire, 1-nerved. Flowers in axillary fascicles or 1-flowered peduncles, shorter than the leaves, minutely bracteolate near the base. Calyx hemispherical, glabrous. Petals concave, oblong, small. Staminal tube with 6–10 large sessile anthers. Capsules size of a peppercorn, globose, rarely didymous, oblique, downy, bursting irregularly. *Handbook of New Zealand Flora, p.* 30.

DESCRIPTION, etc., Fig 1, Plate No. 11.—"THE BRANCH-SPREADING PLAGIANTHUS."—This hardy-looking shrub is abundant in salt marshes, and along the banks of tidal estuaries throughout the Islands, as far south as Canterbury. It is very compact in growth, and forms dense masses; its slender, tough branches spreading and interlacing so as to form an impenetrable scrub. It affords most excellent shelter, and should be useful to arrest the progress of sand dunes from spreading over adjacent country. The capsules, or seed receptacles, are white, about the size of a peppercorn, and arrive at maturity during the latter end of January, or beginning of February, when the bushes are, for the most part, densely covered with them. The average height of the plant is about four feet; its flowers are inconspicuous, but they possess a fragrance.

2. PLAGIANTHUS BETULINUS (*A. Cunn.*) The Birch-like Plagianthus.

SPECIFIC CHARACTER.—A lofty tree attaining 40–70 ft.; when young, a straggling bush with variable leaves. Leaves of young plants $\frac{1}{4}$–$\frac{1}{2}$ in. long, ovate-rounded, variously crenate and lobed, in full growth 1–2 in. long, ovate or ovate-lanceolate, acuminate, rounded, or cuneate at the base, coarsely crenate-serrate, or obtusely doubly serrate, membranous, covered on both surfaces with small stellate hairs, and reticulate venation; petiole slender. Panicles terminal, much-branched, very many-flowered, stellate-tomentose. Flowers small, $\frac{1}{4}$ in. broad, white, on slender ebracteolate pedicels. Calyx campanulate. Petals linear-oblong, narrower in the male flowers. Staminal tube long, slender, exserted in the male, bearing many shortly-pedicelled anthers. Carpel 1. Capsule small, ovoid, acuminate, splitting down one side, 1-seeded.—*Handbook of New Zealand Flora, p.* 30.

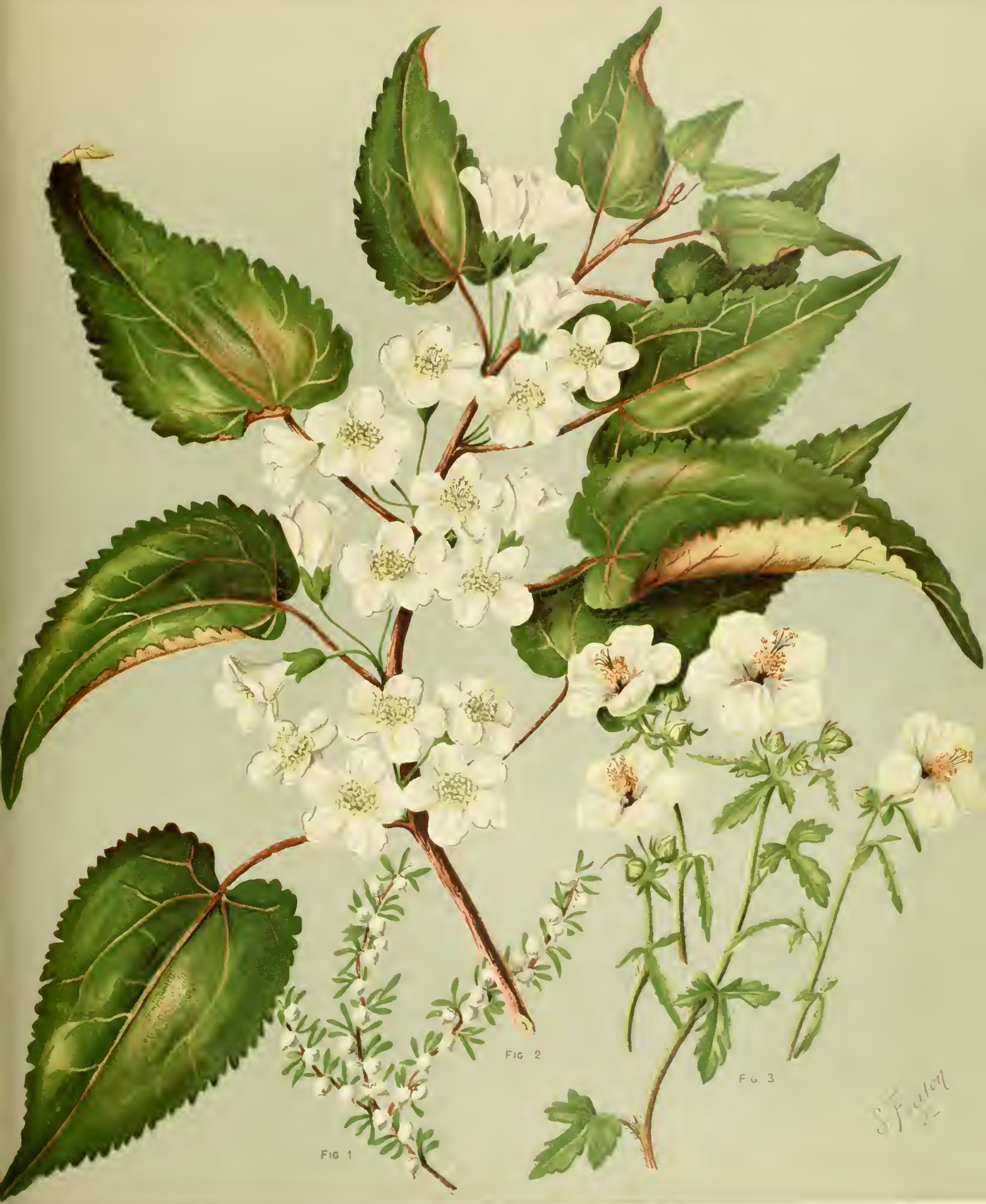
DESCRIPTION, etc.—This species, when a tree, often attains a height of fifty feet, with a trunk from 1–$2\frac{1}{2}$ ft. in diameter; but it is more often found as a straggling bush. It is abundant in forests in most districts throughout the Islands, reaching as far south as Otago, where it is generally known as the "Ribbon Tree," on account of the tough, fibrous, inner bark which it possesses. This species is very graceful in appearance, more closely resembling the European Birch than any other tree in the Colony. On this account, it has obtained its name of *Betulinus*. The wood is white, compact, fissile, but not durable. It has been used for shingles, but is not to be recommended. In

some districts, it is extensively used as firewood. The inner bark of the young branches yields the toughest fibre, and has been used by the Maoris for cordage, and twine for fishing nets. The tree is known by the native name of "Houi," or "Whau-whi," and botanically once bore the nomenclature of *Phillipodendron regium*, in honour of Louis Phillipe, King of France, described by Poiteau, the French botanical draughtsman, in whose work, "*Annales des Sciences Naturelles*," there appears a drawing. This species blossoms in December, and bears a great number of small, white, sweet-scented flowers, containing honey.

3. PLAGIANTHUS LYALLII (*Hook., F.*) Mr. Lyall's Plagianthus.

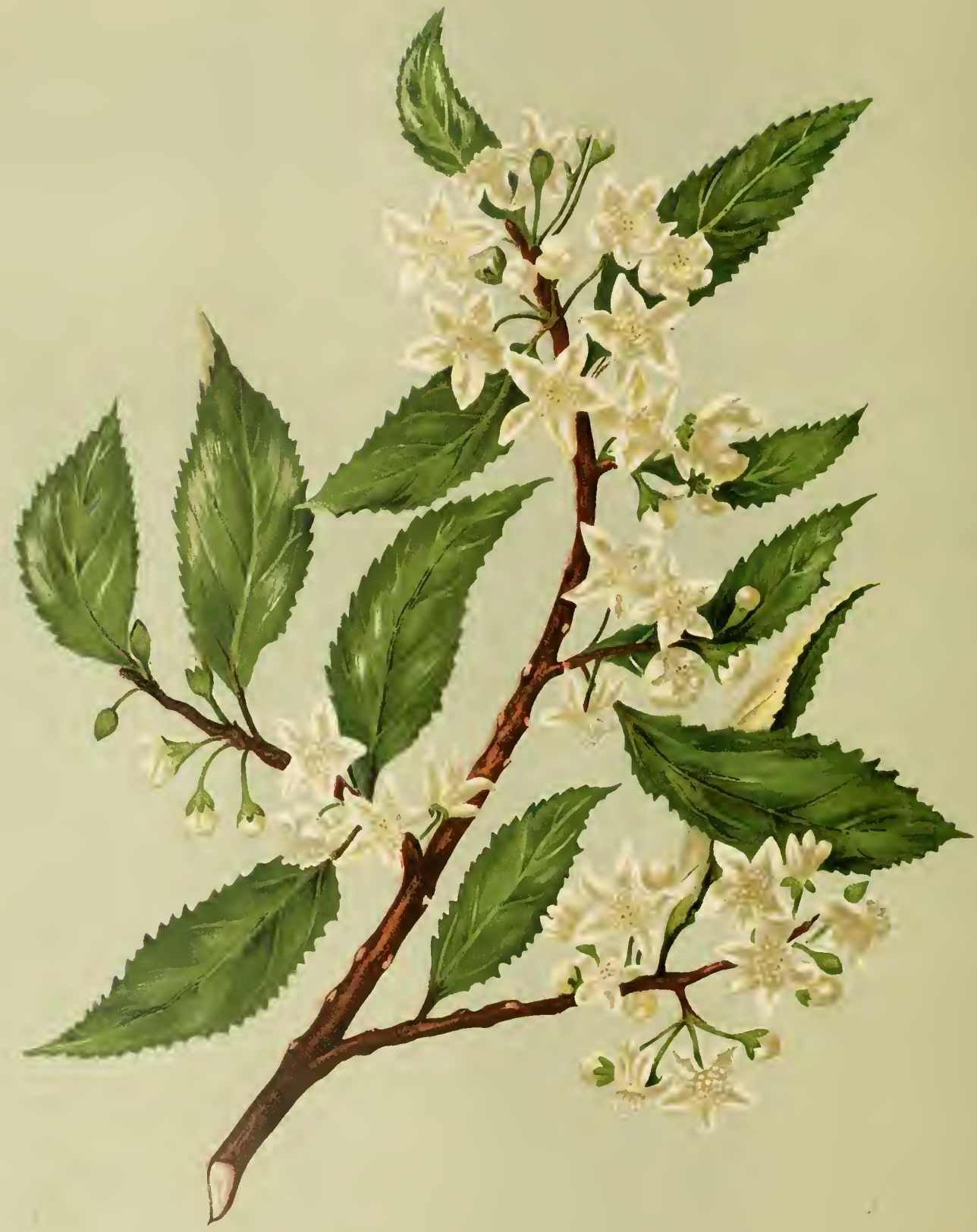
SPECIFIC CHARACTER.—A small branching tree, 20–30 ft. high, with the young branches, inflorescence, and leaves below, covered with white stellate down. Leaves 2–4 in. long, ovate-cordate, acuminate, deeply doubly crenate, glabrous above; petioles ½–1½ in. Flowers large, ¾ in. broad, white, axillary; peduncles 1-flowered, solitary or fascicled, ebracteolate, about as long as the petioles. Calyx broadly campanulate. Petals obliquely obovate-cuneate, obscurely notched on one side towards the apex. Staminal tube short, with many long filiform filaments. Ovary about 10-celled, style slender, divided into as many filiform branches, stigmatose on the inner surface towards the apex. Fruit a depressed sphere, breaking up into 10 compressed reniform membranous carpels. Seed much compressed.—*Handbook of New Zealand Flora, p.* 30.

DESCRIPTION, etc., Fig. 2, Plate No. 11.—"THE HOHERE."—This very handsome tree is found in the mountainous districts of the Middle Island, from Nelson to Milford Sound, fringing the *Fagus* forests on the western slopes of the dividing ranges. Sir Julius Von Haast states that it is deciduous at and above 3,000 feet, but is evergreen below that level. In Autumn, its naked branches and yellow foliage give a peculiar colour to the landscape, at the higher elevation. Owing to the flowering habit of the tree, and its fruit being a depressed sphere, hanging on a long peduncle or stalk, it is commonly known by the settlers as the "Wild Cherry." The wood is white, but possesses no durability. It was formerly in demand for fencing purposes and shingles, but experience has proved its unsuitability; it is only used as firewood. This tree is very beautiful when seen in its native habitat. It blossoms in the months of February and March, when it is laden with masses of delicate white flowers, each flower being three-quarters of an inch across, and forms a conspicuous and charming adjunct to the mountain scenery. It is scarcely possible to conceive any sight more picturesque and pleasing, than the dark background of a mountain ravine enlivened by a fringe of the beautiful Hohere, in full blossom, following the windings of a mountain stream. On account of the fibrous nature of its inner bark, it is popularly known in the Middle Island as one of the "Ribbon Wood" or "Lace Bark" trees, as is the *Hoheria populnea*, and its varieties, in the Northern Island. It bears its specific name in honour of Mr. Lyall, a New Zealand botanist of repute.



BOCK & COUSINS, CHROMO-LITHO.

Fig. 1.--PLAGIANTHUS DIVARICATUS. Fig. 2.--PLAGIANTHUS LYALLII. Fig. 3. HIBISCUS TRIONUM.



HINAU.—Hoheria populnea.

GENUS II.

HOHERIA (*A. Cunn.*) The Hoheria.

GENERIC CHARACTER.—Small trees, with alternate, petioled, excessively variable, pellucid-dotted foliage, and fascicled axillary, white, hermaphrodite flowers. Peduncles jointed in the middle. Bracts 0. Calyx with a broad cup-shaped tube and 5 teeth. Petals linear-oblong, obtuse, oblique. Stamens 5-adelphus. Ovary 5-celled; styles 5, filiform, stigmas capitate. Carpels unknown in (*H. Sinclairii*), laterally quite flat, round a central axis, from which they fall away when ripe, indehiscent, crested at the back with a membranous wing. Seed pendulous. *Handbook of New Zealand Flora, p.* 31.

DESCRIPTION, etc.—This genus is confined exclusively to New Zealand. It consists of only two species—*Hoheria populnea* and *H. Sinclairii;* the former of which has several varieties. They are small trees, bearing white flowers, and are remarkable for the fibrous nature of their bark, and the mucilaginous properties which they possess. The generic name, *Hoheria,* is taken from the native name of "Hohere," given to this genus, in common with *Plagianthus betulinus* and *P. Lyallii*, all of which partake in similarity of character.

1. HOHERIA POPULNEA (*A. Cunn.*) The Poplar-like Hoheria.

SPECIFIC CHARACTER.—A tree 10-30 ft. high, branches hoary. Leaves glabrous, excessively variable in size, shape and toothing, 2-5 in. long, ovate or lanceolate, generally sharply or coarsely double-toothed or serrate. Flowers abundantly produced, snow-white, glabrous or hoary, ½-¾ in. diameter. Carpels produced backwards and upwards into a wing.—*Handbook of New Zealand Flora, p.* 31.

DESCRIPTION, etc.—Plate No. 12.—The "HOUI," or "WHAU-WHI."—This graceful and truly handsome flowering tree attains a height of from ten to twenty feet, and grows abundantly in both Islands. It produces great quantities of snow-white flowers, and is seen to best advantage during the months of March and April, when it is a mass of lovely blossoms. Owing to the chaste appearance of its flowers, it has not inaptly been termed by some the "New Zealand Orange Blossom." It luxuriates in low and sheltered situations. The wood is of no special economic service, but is used extensively in some districts as firewood. The inner bark is peculiar, and consists of layer upon layer of laced fibre, similar to network in appearance. From this peculiarity it is called by the settlers the "Thousand Jacket," "Lace-bark," or "Ribbon-wood." It is not improbable that the Maoris in their carved work may have taken some ideas of design from this beautiful and interesting tracery. The idea of utilising this natural network has been accepted by persons of ingenuity in the Nelson District, where it is most abundant, and many pretty little ornamental articles have been produced from it. A favourite use to which it has been put is that of bonnet construction, and it is asserted that at one time "Lace-bark" bonnets were quite fashionable in Nelson. A very beautiful specimen of the work was exhibited in the Wellington Exhibition in 1885, and attracted considerable attention. The bark is said to afford a demulcent drink; when prepared it is worked up into twine and cordage by the natives for domestic use. In

olden times it was employed by the Maoris for fabrication into the "tapa" cloth worn by their chiefs. The "Houi" has several varieties, the most common ones being var. *A. vulgaris*, with ovate leaves, possessing large sharp teeth; var. *B. lanceolata*, leaves linear or oblong-lanceolate, toothed or serrate; var. *C. angustifolia*, leaves small, linear oblong, spinulose-toothed, flowers small; and var. *D. cratægifolia*, the handsomest of them, leaves ovate, variously lobed, and toothed. All of these have fibrous bark, and white flowers. Our plate is remarkable for its fidelity, and portrays vividly the appearance of this beautiful *Hoheria*.

2. HOHERIA SINCLAIRII (*Hook., F.*) Dr. Sinclair's Hoheria.

SPECIFIC CHARACTER. — Larger in all its parts than *H. populnea*, and readily distinguished from it by its broadly ovate, acute, obtusely serrate, coriaceous, glabrous leaves. The peduncles are usually binate, and shorter than the petioles. It much resembles *Plagianthus Lyallii*, but the leaves are not cordate, more serrate, the peduncles jointed in the middle, stigmas capitate and carpels 5.—*Handbook of New Zealand Flora, p.* 31.

DESCRIPTION, etc.—This beautiful tree is said to be indigenous only to the Northern Island; and, as little is said of it by Dr. Hooker in his remarks, it is, without doubt, rather scarce. The specimen which the Editor of the "*Handbook*" received for classification was amongst some Auckland plants sent, without localities, by Dr. Sinclair. It may possibly be found in other districts in the Northern island, but no definite information has been received on the subject. As it much resembles *Plagianthus Lyallii*, it follows that it must be a very handsome tree. This species is named in honour of the late Dr. Sinclair, R.N., F.L.S., the contributor, formerly Colonial Secretary, an enthusiastic botanist, and a man of high and varied attainments, who was unfortunately drowned in the Rangitata River, whilst on a botanical exploration of the Southern Alps, in company with Sir Julius Von Haast.

GENUS III.

HIBISCUS (*Linn.*) The Hibiscus.

GENERIC CHARACTER—Usually erect herbs, with often lobed leaves and handsome hermaphrodite flowers. Bracts numerous (or few) below the calyx, free or connate. Calyx 5-fid or 5-toothed. Petals usually cuneate, oblique, soon withering. Staminal tube long, 5-toothed at the mouth, below which the filaments are inserted. Ovary 5-celled, with 5 spreading styles and terminal stigmas; cells 2-ovuled. Capsule 5-valved, loculicidal. Seeds glabrous, or woolly.—*Handbook of New Zealand Flora, p. 31.*

DESCRIPTION, etc.—A very large tropical genus, containing many handsome plants, characterised by their large showy flowers, borne singly upon stalks towards the ends of the branches. The majority of the species are tropical, but a few are found in temperate regions; and one, *H. trionum*, occurs in the South of Europe, Australia, and New Zealand. Most of the species are shrubby, but a few form moderately high

trees. All possess the mucilaginous properties common to the order, and several are eaten as pot-herbs, while their inner bark yields more or less fibre. *H. cannabinus* has a prickly stem six or eight feet high, and deeply-parted leaves somewhat resembling those of the Hemp. The flowers are pale yellow, with a dark purple blotch at the bottom of each petal. This species is a native of the East Indies, where it is cultivated on account of the fibre contained in its stem. The fibre, like that of other *malvaceous* plants, bears more resemblance to jute than to hemp, though it is sometimes called "Indian Hemp." *H. rosa sinensis*, a well-known ornament of British hothouses, is a native of India, China, and other parts of Asia. It is a tree of twenty or thirty feet high, and has very variable flowers—double, single, red, dark purple, yellow, white, or variegated, according to the particular variety. These flowers contain a quantity of astringent juice, and when bruised, rapidly turn black or deep purple. They are used by the Chinese ladies for dyeing their hair and eyebrows, and in Java for blacking shoes, whence the plant is sometimes called the "Shoe-black Plant." This species is in cultivation in New South Wales, growing freely in almost any kind of soil. The plant, we are told, is there frequently cultivated for the flowers; these, when dry, are used as a substitute for boot blacking. The flowers contain a large proportion of mucilaginous juice, which perfectly replaces ordinary blacking, giving a varnish-like gloss, and having the advantage, that it can be applied in a few moments. Four or five flowers, with the anthers and pollen removed, are required for each boot, and a polishing brush may be applied afterwards, if desired. *H. syriacus* is a hardy deciduous shrub, with large showy flowers produced in great profusion in the Autumn months. It is commonly called *Althæa frutex*, from the resemblance of its flowers to those of the *Althæa rosea* (*Hollyhock*). The word "*Hibiscus*" is supposed by some to be derived from *Ibis*, a stork, which is said to feed on some of the species. New Zealand is represented by only one species: H. TRIONUM, a very elegant little annual.

1. HIBISCUS TRIONUM (*Linn.*) The Native Hibiscus.

SPECIFIC CHARACTER.—A hispid annual, often branched, stem almost woody below, erect or with spreading branches, 1–2 ft. high. Leaves petioled, cordate, palmately 3–5-lobed. Lobes linear, often serrate or sinuate, the middle one longest. Bracts numerous, setaceous. Flowers ½–1 in. diam., yellow, with a purple eye. Calyx membranous, hispid, veined. Stamens few or many. Seeds dark-brown, wrinkled, glabrous. Capsule hispid.—*Handbook of New Zealand Flora, p.* 32.

DESCRIPTION, etc., Fig. 3, Plate No. 11.—The "HIBISCUS TRIONUM."—This very beautiful tender annual, is indigenous to both Islands. It is most common in the extreme northern parts of the Northern Island, where it has been collected by Mr. J. Buchanan, F.L.S. It has likewise been recognised at Ponawa, on the East Coast, by Archdeacon W. L. Williams, and at South Wanganui, near Collingwood, by Mr. Lyall,

F.L.S. It was at one time supposed, by Mr. Allan Cunningham, the Australian botanist, to have been introduced into New Zealand; but Mr. Colenso, F.L.S., whose long and large botanical experience in the Colony stands unquestioned, affirms that the plant is certainly indigenous. At the present time, it is exceedingly rare, and only to be met with in few and retired places. The inroads of civilisation, with its attendant *improvements*, assisted by fire and cattle, may be said to have practically annihilated one of the prettiest and most ornate specimens of New Zealand plants. This species is likewise indigenous to Australia, where it is much prized, and kept under cultivation as a garden flower. It is propagated by seed, as are all the single-flowered varieties, which come up true to their respective colours. The New Zealand plant has pale primrose-coloured flowers, with a purple patch at the bottom of each lobe, a purple staminal tube, and orange-coloured anthers. It is stated in some districts, that the flowers are devoid of the purple colouring. Our plate representing "The New Zealand Hibiscus," is taken from a plant raised in the vicinity of Pouawa, East Coast; and we trust that our endeavours to perpetuate the memory of so beautiful a plant will be acceptable to our readers. The specific name of *Trionum*, accorded this species, is somewhat vague, but it may possibly bear allusion to the Constellation "Triones," the seven stars of the Greater Bear; but the reason is not altogether clear, nor the connection apparent.

Chapter XI.

Order XI.—TILIACEÆ (including *Elæocarpeæ*). The Lime Tree Family.

Character of the Order.—Trees or shrubs (rarely herbs), with often tough bark, alternate or opposite, often stipulate leaves. Flowers regular, hermaphrodite, rarely uni-sexual. Sepals 4 or 5, free or connate, usually valvate. Petals 4 or 5, free, entire, lobed, or cut. Torus generally conspicuous. Stamens usually numerous, free, inserted on the torus; filaments filiform; anthers 2-celled, often opening by terminal pores; ovary sessile on the torus, 2 10-celled; style simple, usually divided at the apex into as many divisions as cells; ovules few or many, attached to the axis of the cells. Fruit very variable. Seeds generally with fleshy albumen, and broad, flat, thin cotyledons.—*Handbook of New Zealand Flora*, *p.* 32.

Description of the Order.—

A VERY large tropical and sub-tropical order of plants, to which the English Lime Tree (*Tilia*) belongs, together with the Indian Jute (*Corchorus*), valued for its fibre. The species are numerous, especially within the tropics, and some are natives of the temperate regions both of the Northern and Southern Hemispheres, but none extend into the Arctic Circle, or ascend to great mountain elevations. The genera, divided into about forty in number, have been distributed into two sub-orders, or independent orders, *Tilieæ* and *Elæocarpeæ*, upon characters which have failed in so many instances, that they have been re-arranged into seven tribes, viz.:—*Brownlowieæ*, *Grewieæ*, *Tilieæ*, *Apeibeæ*, *Prockieæ*, *Sloanieæ*, and *Elæocarpeæ*. The Common Lime, or Linden, *T. europæa*, the type of the order, is frequently planted as an ornamental tree. It often attains a height of from sixty to a hundred and twenty feet. It is met with generally throughout Europe, except in the extreme North. One variety of it, the small-leaved Lime, is indigenous to Great Britain; but the large-leaved variety, which is commonly planted in New Zealand, is a native of the south of Europe. Various parts of the tree are applied to useful purposes.

The white, soft, but close-grained wood is used by carvers and turners, and by musical instrument makers, for sounding boards. The tough inner bark, called *Bast*, is the material of which the Russian mats used by gardeners and upholsterers are made; and the Russian peasants make shoes, ropes, nets, and other articles of it. The sap yields sugar, and the flowers an abundance of honey, of which the bees are exceedingly fond. The order in New Zealand is represented by three genera, viz.:—(1.) ENTELEA, a small branching tree, leaves alternate; (2.) ARISTOTELIA, shrubs or trees, leaves opposite; (3.) ELŒOCARPUS, trees generally hard-wooded, leaves alternate.

GENUS I.

ENTELEA (*Brown.*) The Entelea.

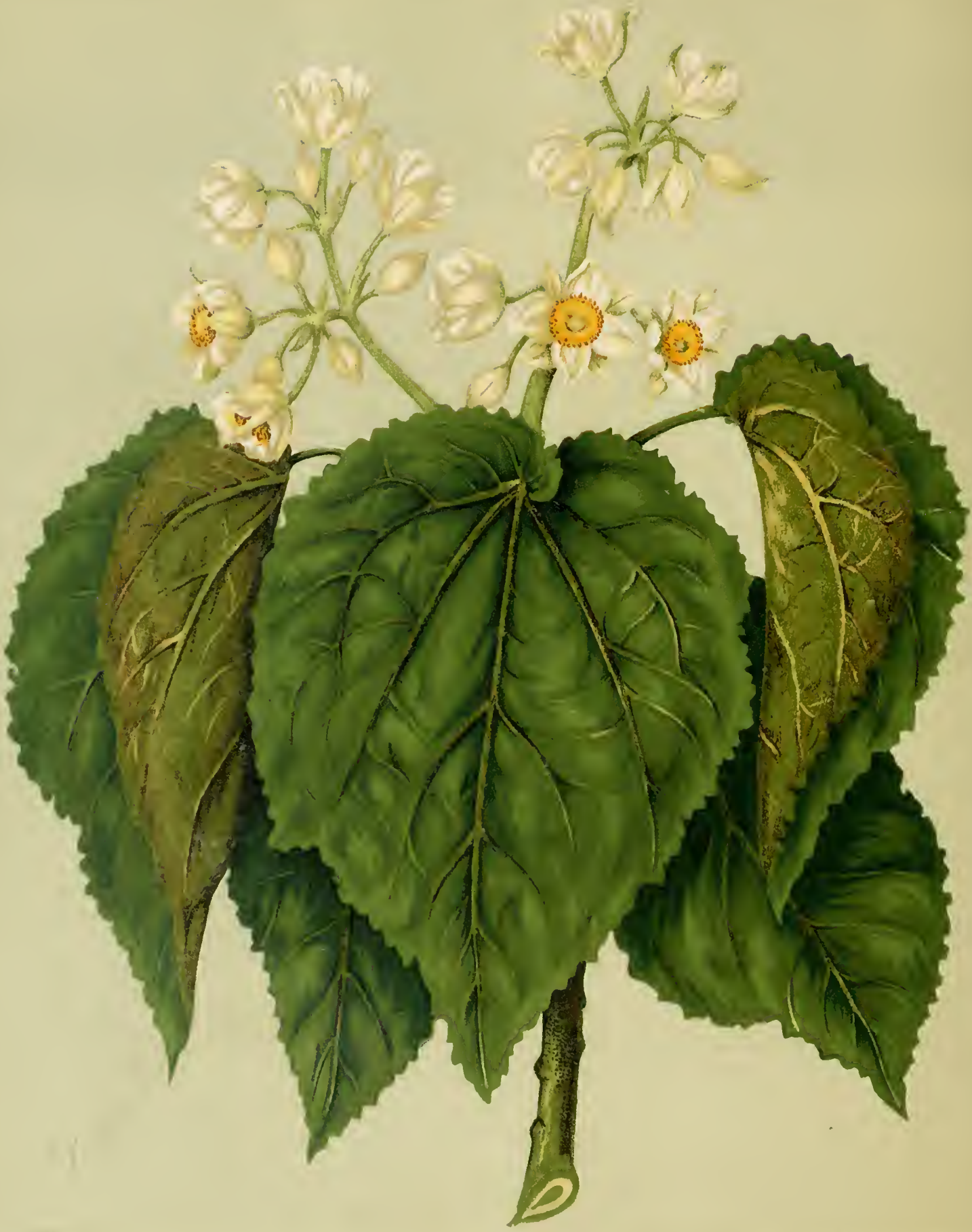
GENERIC CHARACTER.—A small, branching, light-wooded tree, covered with stellate down, having large, alternate, 5–7-nerved, cordate, toothed, stipulate leaves, and umbellate cymes of white flowers. Sepals, 4 or 5, free. Petals, 4 or 5, undulate. Stamens very numerous, free, on a low torus, with filiform filaments, and versatile anthers. Ovary 4–6-celled; style simple, stigmatiferous at the toothed apex; cells, many-ovuled. Capsule globose, echinate, with long rigid bristles, 4–6-valved, loculicidal.—*Handbook of New Zealand Flora*, *p.* 32.

DESCRIPTION, etc.—This genus is peculiar to New Zealand, and is represented by a single species, *Entelea arborescens*, which is most nearly allied to *Sparmannia*, a genus of Abysinnian and South American shrubs or trees, with heart-shaped, toothed, or lobed leaves, and terminal cymes of white flowers. The genus *Sparmannia* derives its name from Dr. A. Sparmann, a Swedish botanist, who accompanied Captain Cook in his second voyage round the world, and introduced into cultivation the well-known *S. africanus*, which is commonly met with in green-houses in Britain.

1. ENTELEA ARBORESCENS (*Brown.*) The Arborescent Entelea.

SPECIFIC CHARACTER.—Leaves 4–8 in. long, on long petioles, oblique, often lobed irregularly and acutely, doubly or trebly crenate, or serrate; stipules persistent. Flowers white, abundant, in erect cymes, bracteate at the axils, ¾–1 in. diam., drooping. Sepals accuminate; ovary hispid. Capsule the size of a hazel nut; spines nearly an inch long. Seeds in two rows. Albumen oily.—*Handbook of New Zealand Flora*, *p.* 32.

DESCRIPTION, etc., Plate No. 13.—The "WHAU," or "HAUAMA."—This very beautiful small tree is peculiar to the Northern Island of New Zealand, but it is not common. It is chiefly met with on the outskirts of lowland forests, and fringing deserted clearings. Its attractive, large, bright-green foliage, and handsome white flowers with yellow eye, arrest the attention of the most unappreciative traveller, and marks the forest scenery with a beauty that is rare and exquisite. The tree is small, scarcely ever exceeding ten or twelve feet in height, and is admirably suited to become a magnificent addition to our gardens and shrubberies. The woody branches are used by the Maoris as floats for their fishing nets, and in the construction of small rafts employed by them in laying out their crayfish pots. Owing to the extreme lightness



WILLD. — Emilia arborescens.

and buoyancy of the wood, the tree is known to the Colonists as the "Cork Tree." The foliage is greedily eaten by cattle, and possesses highly nutritious properties. The *Entelea* blossoms in the month of November, when both seed capsules and flowers may be found on the tree at the same time. The capsule, being armed with rigid bristles or spikes, nearly an inch long, presents quite a formidable appearance, and makes handling appear rather hazardous. The cut blossoms are difficult to preserve fresh, even for a few hours, as the thick mucilaginous sap exudes rapidly from the dismembered part, so that it fairly *bleeds* to death. The only method by which it has been found possible to preserve the blossom, even for a short time, is to insert the stem, as soon as cut, into a potato perforated to receive it; thus, the flow of sap is arrested, and the life of the branch thereby prolonged. The plant is very delicate when young, and when removed from the shelter of its bush home. When introduced into gardens, protection must be afforded it against frost, or its foliage will suffer, and it will probably die. Young plants can be obtained from the nurserymen in the northern principal towns; and to those who are admirers of a handsome shrub, we would say, by all means introduce the "Whau" into your gardens, the beautiful Begonia-looking leaf of which is, as our plate portrays, a pleasure to the eye. In some districts, this tree is known as the "Whau," and in others it is called the "Hauama."

GENUS II.

ARISTOTELIA (*L'Heritier.*) The Aristotelia.

GENERIC CHARACTER.—Shrubs or trees, with opposite or sub-opposite, exstipulate leaves. Flowers usually uni-sexual. Sepals, 4 or 5, valvate or sub-imbricate. Petals, 4 or 5, lobed or crenate, rarely entire, sometimes minute. Stamens, 4 or 5, or numerous, inserted on the glandular torus; filaments short; anthers with short terminal slits; ovary 2–4-celled; style subulate, entire; cells 2-ovuled. Berry 2–4-celled, few, or many-seeded. Seeds often fleshy on the outside of the hard testa.—*Handbook of New Zealand Flora, p.* 33.

DESCRIPTION, etc.—A small genus comprising two Australian species, two Tasmanian, one Chilian, and three New Zealand. The flowers are small and white, or rosy, arranged in axillary fascicles, or in racemes; the berries roundish, varying in colour from pink to black, and in size from that of a small pea to a cherry. The wood of *A. maequi*, a native of Chili, is used for making musical instruments, its tough bark forming the strings. The berries are acid but edible, and a wine is made from them by the Chilians, which is given as a specific in malignant fever. It was employed by Dombey in Chili during the plague of 1782, with general success. The genus is named in honour of the Greek Philosopher. The three New Zealand species are:—(1.) A. RACEMOSA, a handsome tree with large leaves, and many-flowered racemes; (2.) A. COLENSOI, a smaller tree than the former, but very similar; (3.) A small rigid shrub, with small leaves and few flowers.

1. ARISTOTELIA RACEMOSA (*Hook., F.*) The Racemose-flowered Aristotelia.

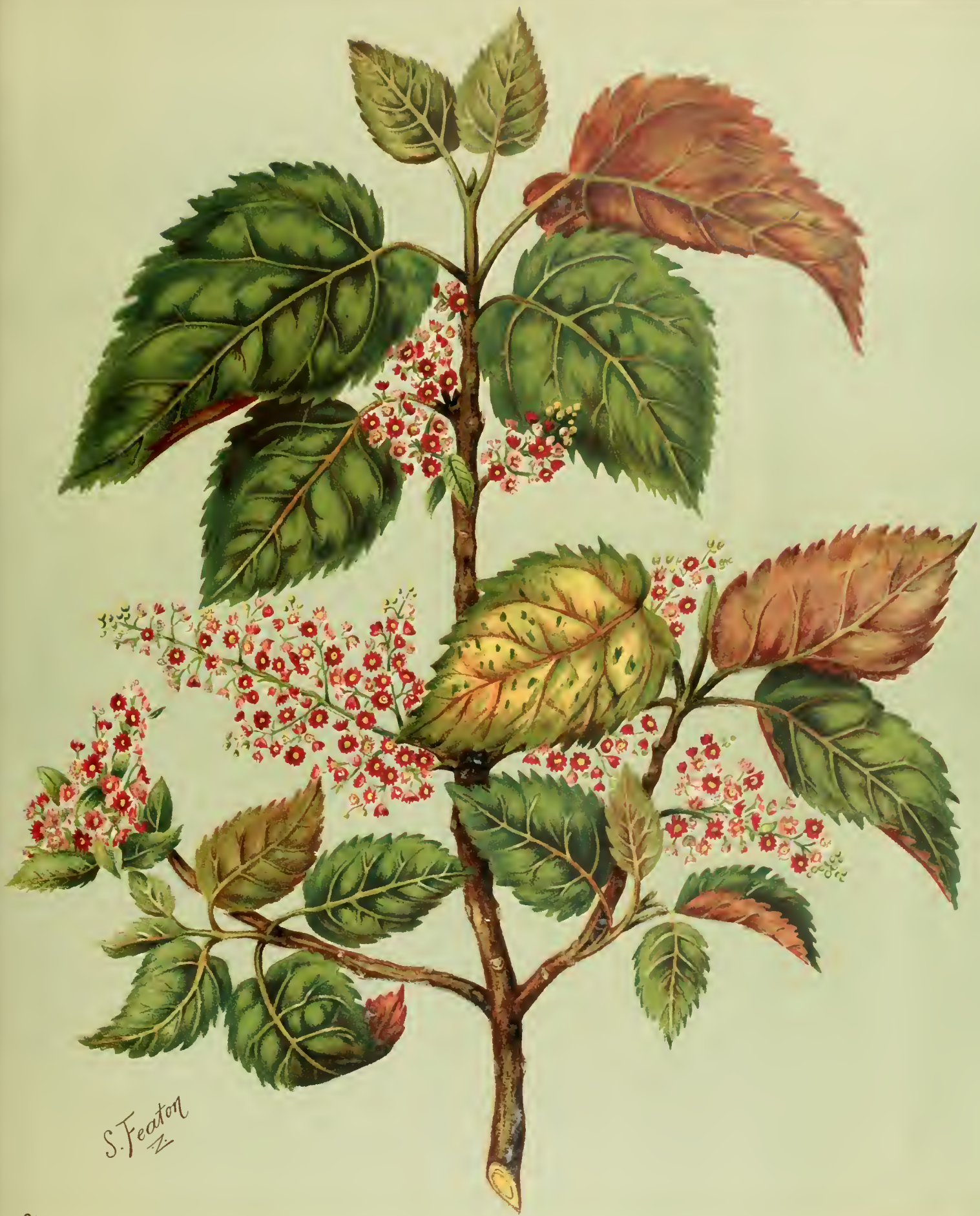
SPECIFIC CHARACTER.—A small handsome tree, 6–20 ft. high, with blackish bark and pubescent twigs. Leaves on long petioles, membranous, pubescent, variable in form, 3–5 in. long, ovate-cordate or oblong-lanceolate, acuminate; deeply, irregularly and acutely serrate; often red or purple beneath. Racemes panicled, axillary, many-flowered; peduncles and pedicels slender. Flowers dicœcious, small, the males largest, $\frac{1}{6}$–$\frac{1}{3}$ in. diam., nodding. Petals 4, 3-lobed, rosy, of the female flower very small. Stamens numerous, yellow, minutely hairy; anthers larger than the filaments; ovary usually 4-celled. Berry, size of a pea, eaten by the natives.—*Handbook of New Zealand Flora, p.* 33.

DESCRIPTION, etc., Plate No. 14.—The "MAKO-MAKO."—This very handsome, quick-growing small tree is common to both the Northern and Middle Islands. It rarely exceeds twenty feet in height, and does not attain great dimensions. The bark is blackish, and the twigs are covered with short soft hairs. One of the principal features of beauty in this tree is its leaves, which are a rich green on top and crimson below, and have somewhat the appearance of shot silk. As seen from underneath they are semi-transparent, which in the sunlight produces a most charming effect. The grace of the foliage and its varied hues of colour is a delightful spectacle. When in blossom the profuse display of dainty pink flowers, add much to its beauty.

* * * * *

"To rest awhile beneath the Mako's shade,
And feast the eye with vistas draped in sheen;
'Midst leafy visions green with crimson laid,
And glints of sunlight, struggling in between;
A rich delight; where tempting berries sway,
And rays prismatic softly intertwine;
Softening down the purer light of day,
Into shadows delicate and fine."

The Mako-Mako is fully in blossom in the early part of October, the male trees, which display the largest and most numerous flowers, present a charming picture—the female trees are not nearly so handsome. They grow usually on the edges, or in the more open parts of the bush. The flowers have not any perceptible fragrance, and produce no honey. In some districts the tree is known as the "Wine-berry," and wine has been prepared from its abundant and juicy fruit. The berries are about the size of a garden currant, and dark crimson in colour; they are eaten by the Maoris, and the native birds evince a decided partiality for them. The wood is white, very light, and is in request for the purpose of making veneers. Though the tree is abundant, or even common throughout the colony, its general airy and beautiful character, should claim for it a place in our gardens or shrubberies. It is fairly hardy, and young plants can be obtained from nurserymen, or from the bush at the foot of the parent tree. The plant improves under cultivation, and becomes a very pleasing addition around the homestead. The foliage is eaten by cattle, and is not injurious. Our plate is a representation of the male tree in rich profusion of blossom.



Bock & Cousins. Chromo-Litho

MAKOMAKO.—Aristotelia racemosa.

2. ARISTOTELIA COLENSOI (*Hook., F.*) Mr. Colenso's Aristotelia.

SPECIFIC CHARACTER.—Very similar, in most respects, to *A. racemosa*, but differing in the much narrower, perfectly glabrous leaves, which are ovate-lanceolate, narrowed into a long acuminate point, deeply irregularly serrate; and the small fruit which is no bigger than a peppercorn. The seeds are as in *A. racemosa*. I have seen no flowers. *Handbook of New Zealand Flora, p.* 33.

DESCRIPTION, etc.—This small tree is common to the Northern Island, and is known mostly as growing in the woods of the Wairarapa Valley. It is probably known in other districts, but its presence has not been indicated. It is in appearance similar to *A. racemosa*, but has much smaller leaves and smaller fruit. It is consequently not so handsome as the foregoing. The able compiler of the "*Handbook*" not having seen the plant in flower,—only, evidently, having had a fruiting specimen to diagnose,—we are unable to speak as to the size or colour of its flowers. The species is called after Mr. Colenso, F.L.S., as a further tribute to his extensive researches in New Zealand botany.

3. ARISTOTELIA FRUTICOSA (*Hook., F.*) The Shrubby Aristotelia.

SPECIFIC CHARACTER.—A small, rigid, erect or decumbent shrub, with woody tortuous branches, and erect or spreading downy shoots, with red brown bark. Leaves very variable, on short, downy or glabrous petioles, coriaceous, ¼–1 in. long, ovate-obovate, or linear-oblong, obtuse, entire, crenate-toothed, serrate or lobed. Flowers minute, usually solitary and axillary, rarely racemose; peduncles usually short. Petals, 4, very short, or as long as the calyx, entire or lobed, pink, shorter in the female. Stamens, 1–6; filaments short; anthers downy; ovary 2–4-celled. Berry, globose, small, 4–6-seeded. Seed with a bony, rugged testa, covered with a thin pulp.—*Handbook of New Zealand Flora, p.* 33.

DESCRIPTION, etc.—This species is common in mountainous districts throughout the Islands, at an altitude of from 2,000 to 4,000 feet, and varies greatly in character. It is stated by Sir J. D. Hooker, in the "*Handbook*," "that he made four varieties, but they seem to be only states, determined by age and exposure, rather than hereditary races." Messrs. Hector and Buchanan appear to regard this species as a form of *A. racemosa*. As in *A. racemosa*, the flowers are polygamous, but much smaller and more sparingly produced, and are destitute, like the other species, of fragrance and honey. Its specific name is due to the plant being of a shrubby character.